PUBLIC NOTICE

US Army Corps of Engineers®
New England District

696 Virginia Road
Concord, MA 01742-2751

Date: May 9, 2006
Comment Period Ends: July 3, 2006
File Number: 2005-786
In Reply Refer To: Ted Lento

Northeast Gateway Energy Bridge, LLC ("Northeast Gateway") and Algonquin Gas Transmission, LLC ("Algonquin") have requested Corps of Engineers permits under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act to place fill material and structures within waters of the United States for the construction and operation of a liquefied natural gas ("LNG") deepwater import terminal. Northeast Gateway would construct and operate the LNG terminal that would be located approximately 13 miles southeast of Gloucester, Massachusetts in Federal Waters approximately 270 to 290 feet in depth. Algonquin is proposing to place fill material and structures within waters of the U.S. in order to construct a natural gas pipeline in Massachusetts Bay that will facilitate the delivery of re-gasified LNG from the proposed terminal to the existing offshore HubLine natural gas pipeline. The proposed facilities of both applicants are referred to as the Northeast Gateway Project ("NEG") and together compose a single and complete project. The Algonquin pipeline is also subject to the jurisdiction of the Federal Energy Regulatory Commission ("FERC") pursuant to the Natural Gas Act and the Northeast Gateway terminal is regulated by United States Coast Guard ("USCG") & U.S. Maritime Administration ("MARAD") pursuant to the Deepwater Port Act.

Both of the applicants require Corps permits because their proposed work occurs within jurisdictional waters of the United States. Approximately 12.5 miles of the proposed pipeline would occur in the waters of the Commonwealth of Massachusetts and a 3.56 mile section of the pipeline would be in Federal waters. The two terminal buoys would be located at coordinates 70° 35' 31.02″W, 42° 23' 38.46″ N and 70° 37' 0.36″ W, 42° 23' 56.40″ N.

The work is depicted on the enclosed plans entitled "PROPOSED – NORTHEAST PORT: STL BUOYS, ANCHOR CHAINS, PLEMs and FLOWLINES" consisting of 8 sheets dated DEC 2005 with sheets 3,4 & 8 revised May 2006 and "NORTHEAST GATEWAY PIPELINE LATERAL" consisting of 22 sheets dated 5/2/2006.

USCG and MARAD National Environmental Policy Act (NEPA) Review

The NEPA review of the NEG project is being conducted by the USCG and MARAD with the participation and assistance of cooperating Federal Agencies including the Corps. The Draft Environmental Impact Statement is expected to be available for public review by May 19, 2006 and accessible to the public on the Department of Transportation Docket Management System internet site http://dms.dot.gov under docket number 2005-22219.

The U.S. Coast Guard is the federal agency responsible for safe vessel transit and facility operation, and the Corps will utilize their findings on these issues in its deliberations. The focus of this

comment period and these hearings, for the Corps, is to receive comments on the installation of moorings and pipelines as well as the placement of fill material within the waterway, which is the Corps primary area of jurisdiction for this project.

WORK PROPOSED BY NORTHEAST GATEWAY

The terminal will consist of two subsea Submerged Turret Loading™ STL Buoys, each having a flexible riser assembly and a Pipeline End Manifold (PLEM) connecting the riser assembly, via a steel flowline, to the subsea pipeline lateral proposed by Algonquin. Approximately 6,393 feet of the flowlines will be lowered below the seabed as shown on Sheet 8 of 8. Sheets 2 of 8 and 3 of 8 present plan views of the terminal. Sheet 4 presents isometric drawings for the STL Buoys and other Port facilities. Sheets 5, 6, 7 and 8 provide cross sections and elevations of the buoy and anchor chains, a suction anchor, a PLEM and a flowline. Northeast Gateway will utilize a fleet of specially designed Energy Bridge™ RegasificationVessels (EBRVs), each capable of transporting approximately 2.9 billion cubic feet (Bcf) of natural gas condensed to 4.9 million cubic feet of LNG. The EBRVs will dock to the STL™ buoys, which in turn will serve as both the single-point mooring system for the vessels and the delivery conduit for natural gas. The STL™ buoy incorporates eight mooring anchors in a star-shaped array to hold the buoy in place. The following Table A3-1 summarizes the construction and operation related projects impacts.

Table A3-1. Port Area Requirements During Construction and Operation of a Dual Buoy System

Port Component	Number of Components for two STL™ Buoy Systems	Maximum Total Area of Seafloor Disturbance During Construction (acres/hectares)	Maximum Total Area of Seafloor Affected During Operation (acres/hectares)
Flowlines (not including temporary anchoring for barge move-ahead)	2	27.0/10.9	0.2/0.1
Buoys	2	None	None
Mooring Wire Rope and Chain (including chain sweep)	16	5.4/2.2	42/17 when EBRV on buoy, 4/1.6 when EBRV disconnected[1]
Flexible Risers	2	None	None
Suction Anchors	16	0.4/0.1	0.4/0.1
PLEMs	2	0.2/0.1	0.2/0.1
Total		33.0/13.3	42.8/17.3

[1] The acres of disturbance during operation are based on a 100 yr. storm event. Under normal conditions seafloor disturbance would be 32/14.5 acres/hectares and 1/.45 acres/hectares, respectively

WORK PROPOSED BY ALGONQUIN

The proposed pipeline lateral consists of approximately 16.1 miles of 24-inch diameter natural gas pipeline. The pipeline would originate at the existing HubLine pipeline (milepost [MP] 0.0) in waters approximately 3 miles east of Marblehead, Massachusetts as depicted in the attached plans. Starting from MP 0.0 the proposed pipeline route would extend towards the northeast, crossing the outer reaches of the territorial waters of the Town of Marblehead and the cities of Salem, and Beverly, and the Town of Manchester-by-the-Sea for approximately 6.3 miles. The route would follow a path along the seafloor that has limited areas of hard materials such as cobble and coarse glacial till. No areas of bedrock have been identified along the proposed route. At about MP 6.3, the pipeline lateral would reach its most northerly point and start a bend to the east and southeast following a path of medium and fine-grained

sediments. The pipeline route would continue to the south/southeast for approximately 6.2 miles to MP 12.5, where it would leave state waters and enter federal waters. The route then would extend to the south for another approximately 3.6 miles, terminating at the proposed flowlines for the Northeast Gateway terminal.

The proposed construction techniques includes placement of marine pipeline on the seabed, plowing (to lower the pipeline below the seabed), backfill plowing (to cover the pipeline), and tie-in of the pipeline to the existing HubLine. Algonquin may also utilize other mechanical trenching devices in the event plowing equipment is unavailable; however, the area of impact and availability of backfill spoil will be similar to plowing. Other mechanical trenching devices do not include jetting, except where Algonquin has indicated on the plans that jetting will be required. In general, Algonquin will utilize traditional marine pipeline construction vessels and equipment to construct the pipeline lateral. Algonquin will lower the pipeline with one pass of the plow such that the top of the pipe is expected to be a minimum of 1.5 feet (.5 meter) below the seabed with a design target of 3 feet (1 meter) below the seabed. In areas where one pass of the plow does not lower the pipeline at least 1.5 feet below the seabed, remedial burial measures will be utilized. In limited areas, primarily at the crossing of the existing Hibernia communications cable and at any sites not feasible to plow due to unforeseen subsurface geologic conditions, the pipeline will be laid on the surface and armored with rock or concrete mats. In areas along the route where jetting is proposed to excavate the trench, the Pipeline Lateral will be backfilled with sand (placed by tremie tube), concrete mats, or diver-placed sand bags depending on the operational requirements of the site. Whatever material is used, it will be placed over the pipeline using a tremie tube or by divers. No imported backfill material will be dumped from vessels on the surface. A summary of the impacted areas are listed in the attached Table 2.3-1 entitled "Construction Methods, Sediment Type and Impacts".

GENERAL INFORMATION

The project purpose is to provide a reliable and timely supply of natural gas that will increase energy diversity while minimizing environmental impacts and mitigating safety concerns in order to serve the growing demand for residential and industrial use, as well as electric generation within Massachusetts and New England.

This project will impact Essential Fish Habitat (EFH) for fish and invertebrates within the corridor of the pipeline lateral and area of the terminal. The USCG draft Environmental Impact Statement (EIS) will include an EFH Assessment in appendix B that is being reviewed by the National Marine Fisheries Service (NMFS). Based upon this assessment of impacts to EFH, we have preliminarily determined that the project may have an adverse effect on EFH and therefore it is likely further EFH consultation will be required prior to the final permit decision.

In order to evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. Comments should be submitted in writing by the date in the title block above. If you have any questions, please contact Ted Lento at (978) 318-8863 or (800) 362-4367, if calling from within Massachusetts.

In addition to or in lieu of sending written comments, we invite you to attend the public hearings listed below that the USCG, the MARAD, the FERC and the Corps will jointly conduct in the project area. There will be an informational open house and registration from 4:30 PM until 6 PM and the hearing will begin at 6 PM. By attending these public hearings, the Corps of Engineers seeks to fulfill its regulatory requirements to solicit public comments and input about the proposals. These comments will be considered in evaluating whether the application should be issued or denied.

Public Hearings

June 14, 2006

Gloucester High School Auditorium
32 Leslie O. Johnson Road
Gloucester, MA 01930

June 15, 2006

Salem State College Library
Charlotte Forten Hall
360 Lafayette Street
Salem, MA

All interested Federal, State and local agencies, interested private and public organizations, and individuals are invited to attend these public hearings. Persons wishing to provide oral comments are required to register at the entrance to the hearing room prior to speaking.

Brian E. Valiton

for Karen Kirk Adams
Chief, Permits & Enforcement Branch
Regulatory Division

SEE NEXT PAGE FOR DETAILS OF EVALUATION FACTORS

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 as amended.

Based on his initial review, the District Engineer has determined that little likelihood exists for the proposed work to impinge upon properties with cultural or Native American significance, or listed in, or eligible for listing in, the National Register of Historic Places. Therefore, no further consideration of the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, is necessary. This determination is based upon one or more of the following:

a. The permit area has been extensively modified by previous work.
b. The permit area has been recently created.
c. The proposed activity is of limited nature and scope.
d. Review of the latest published version of the National Register shows that no presence of registered properties listed as being eligible for inclusion therein are in the permit area or general vicinity.
e. Coordination with the State Historic Preservation Officer and/or Tribal Historic Preservation Officer(s)

Pursuant to the Endangered Species Act, the District Engineer is hereby requesting that the appropriate Federal Agency provide comments regarding the presence of and potential impacts to listed species or its critical habitat.

The following authorizations have been applied for or will be obtained:

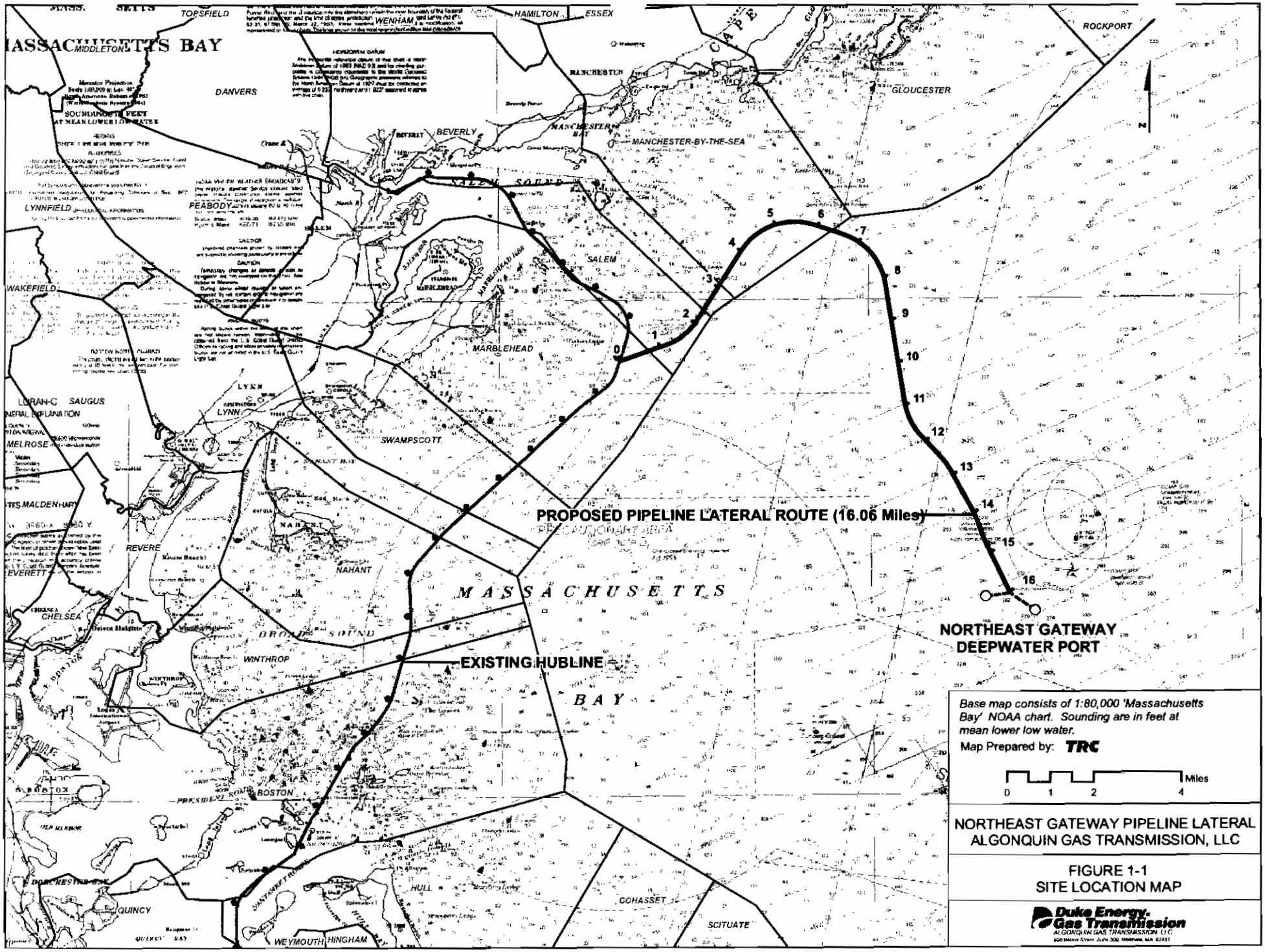
(X) Permit, License or Assent from State (Massachusetts).
(X) Permit from Local Wetland Agency or Conservation Commissions.
(X) Water Quality Certification in accordance with Section 401 of the Clean Water Act (Massachusetts).

The States of Connecticut, Maine, Massachusetts, New Hampshire and Rhode Island have approved Coastal Zone Management Programs. Where applicable the applicant states that any proposed activity will comply with and will be conducted in a manner that is consistent with the approved Coastal Zone Management Program. By this Public Notice, we are requesting the Massachusetts Coastal Zone Management Office concurrence or objection to the applicant's consistency statement.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.
THIS NOTICE IS <u>NOT</u> AN AUTHORIZATION TO DO ANY WORK.

If you would prefer not to continue receiving Public Notices, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at bettina.m.chaisson@usace.army.mil. You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: _____
ADDRESS: _____

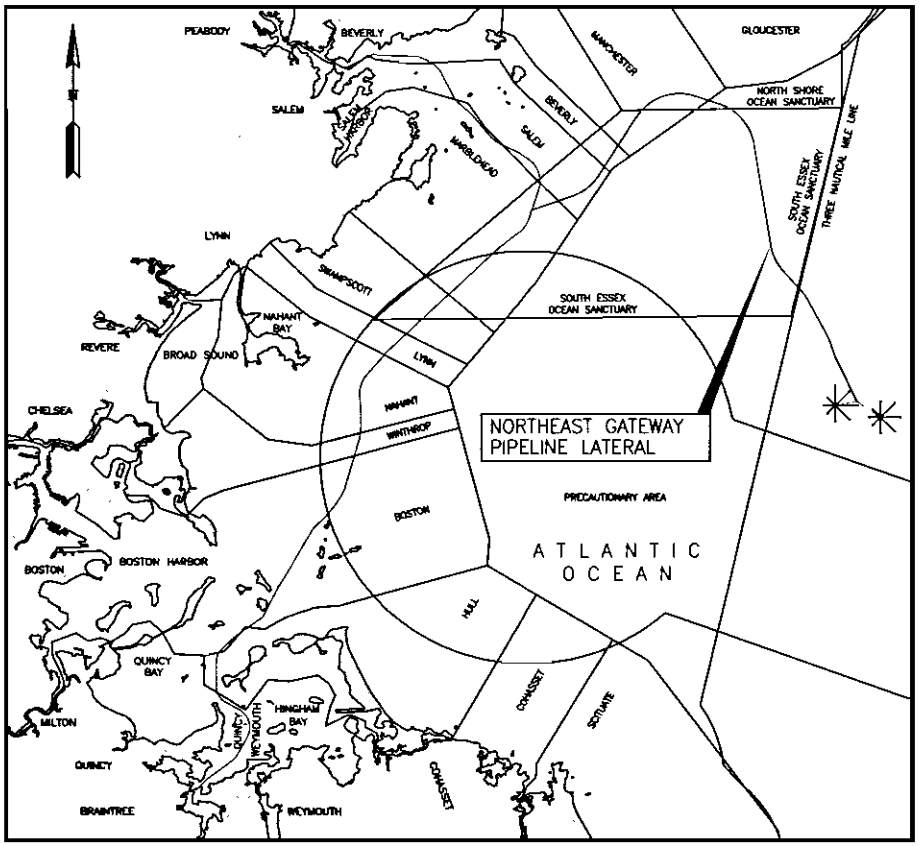


R:\Projects\GIS_2004\42898_NortheastGateway\GIS-Mapping\Ferc\MXD\1.1-1.mxd

NORTHEAST GATEWAY PIPELINE LATERAL
16.06 MILES OF 24" PIPELINE
LINE NO. I-16-24"

LIST OF DRAWINGS

DRAWING NO.	TITLE	REVISION
M5-L-1000	DRAWING INDEX	D
M5-A-1000	AREA MAP - NOAA	G
M5-Z-2050	CONSTRUCTION VESSEL ANCHOR CORRIDOR, SHT 1 OF 4	D
M5-Z-2051	CONSTRUCTION VESSEL ANCHOR CORRIDOR, SHT 2 OF 4	E
M5-Z-2052	CONSTRUCTION VESSEL ANCHOR CORRIDOR, SHT 3 OF 4	D
M5-Z-2053	CONSTRUCTION VESSEL ANCHOR CORRIDOR, SHT 4 OF 4	D
M5-Z-2100	ALIGNMENT AND PROFILE	E
M5-Z-2101	ALIGNMENT AND PROFILE	E
M5-Z-2102	ALIGNMENT AND PROFILE	E
M5-Z-2103	ALIGNMENT AND PROFILE	E
M5-Z-2104	ALIGNMENT AND PROFILE	E
M5-Z-2105	ALIGNMENT AND PROFILE	E
M5-Z-2106	ALIGNMENT AND PROFILE	E
M5-Z-2107	ALIGNMENT AND PROFILE	E
M5-Z-2108	ALIGNMENT AND PROFILE	E
M5-Z-2109	ALIGNMENT AND PROFILE	E
M5-Z-2110	ALIGNMENT AND PROFILE	E
M5-Z-2111	ALIGNMENT AND PROFILE	E
M5-Z-2112	ALIGNMENT AND PROFILE	E
M5-Z-2113	ALIGNMENT AND PROFILE	E
M5-Z-2114	ALIGNMENT AND PROFILE	E
M5-Z-2115	ALIGNMENT AND PROFILE	E
M5-Z-2116	ALIGNMENT AND PROFILE	E
M5-Z-2117	ALIGNMENT AND PROFILE	E
M5-Z-2118	ALIGNMENT AND PROFILE	E
M5-Z-2119	ALIGNMENT AND PROFILE	E
M5-Z-2120	ALIGNMENT AND PROFILE	E
M5-Z-2121	ALIGNMENT AND PROFILE	E
M5-D-1002	BURIED HIBERNIA CABLE CROSSING DETAIL	C
M5-D-1003	CABLE ANOMALY CROSSING DETAIL	C
M5-P-0005	HOT TAP TIE-IN SPOOL FABRICATION DETAIL	E
M5-P-0006	GENERIC PIPELINE REPAIR SPOOL	A
M5-S-1002	HOT TAP TIE-IN CLAMP	C
M5-P-8001	HOT TAP TIE-IN SPOOL AREA MAP	C
M5-P-1008	HOT TAP COVER DETAIL	C
M5-P-1008	COLLOCATED SIDE-TAP FABRICATION DETAIL	D
M5-S-1003	COLLOCATED SIDE-TAP TIE-IN CLAMP	C
M5-P-8002	COLLOCATED SIDE-TAP AREA MAP	C
M5-P-1007	COLLOCATED SIDE-TAP COVER DETAIL	C
M5-P-1011	BLIND FLANGE/2" VALVE GUARD ASSEMBLY FABRICATION DETAILS	B



NOT FOR CONSTRUCTION
ISSUED FOR BID

AREA MAP

8,000 0 16,000
8,000

PROJECT CONSULTING SERVICES, INC.

NORTHEAST GATEWAY LATERAL
DRAWING INDEX

DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-26-06	PROJ. MGR.:	
CHECKED BY:	M.A.V.	SHEET:	

DWG. NO. M5-L-1000 REV. E

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

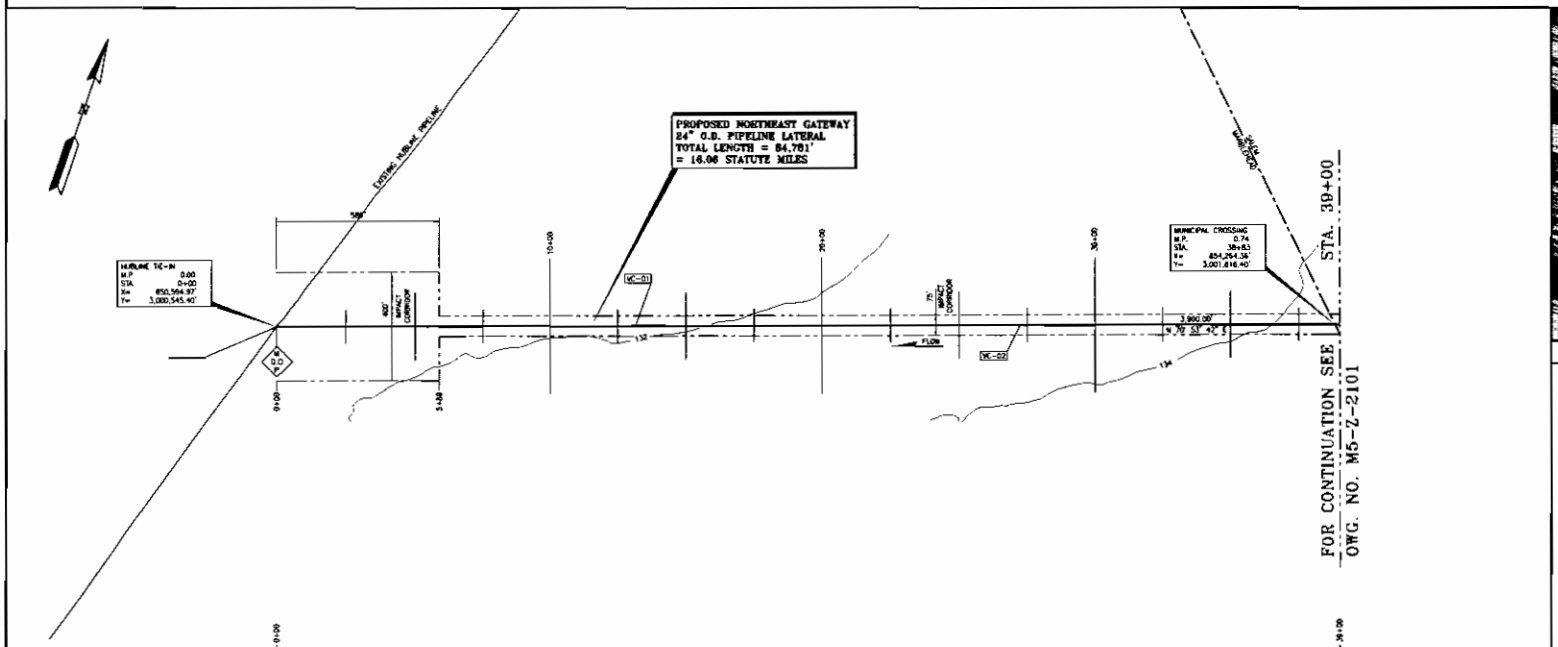
NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPR'VL
D	5-7-06	ISSUED FOR BID	G.J.D.	J.A.R.	R.P.G.
C	1-5-06	ISSUED FOR COMMENT	G.J.D.	J.A.R.	R.P.G.
B	6-8-05	ISSUED FOR FERC FILING	C.J.C.	M.A.V.	R.P.G.
D	5-26-05	PRELIMINARY	C.J.C.	M.A.V.	R.P.G.

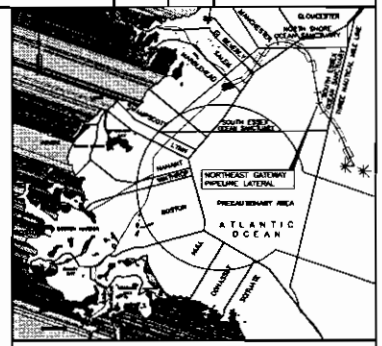
REVISIONS

04C3084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED MAY 2005, OCEAN SURVEYS, INC.

REFERENCE DRAWINGS

	THIS DWG.	TOTAL
SALEM	15.72'	8,519.20' = 1.63 STATUTE MILES
MARBLEHEAD	3,883.28'	3,883.28' = 0.74 STATUTE MILES





MAP INDEX

VC-02 - VIBRATORY CORE LOCATION

0.0 - MILE POST REFERENCE (STATUTE MILES)

134 - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND, MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET. VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED
3. REFERENCE http://www.mass.gov/mgis.html FOR MUNICIPALITY BOUNDARIES [DTS-2006], TOWNSHIP BOUNDARIES AND OCEAN SANCTUARIES.
4. TEST PRESSURE WILL BE 2545 (-0, +25) PSIG.
5. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS.
   BFF - BACKFILL FLOW
   CC MATS - CONCRETE MATS
   M - IMPORTED MATERIAL (SAND [MCS, TRIMMED SAND])

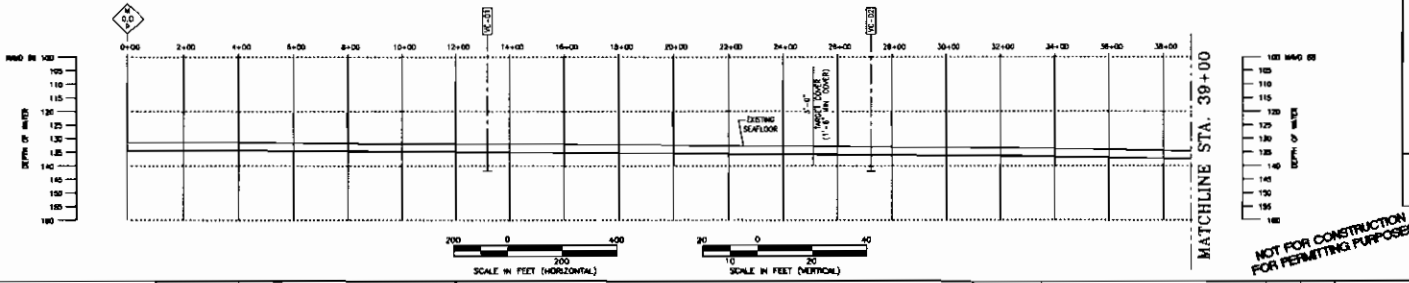
LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS

HOT TAP TIE-IN AND TRANSITION — FLOW/JET — CC MATS OR M

LAY — FLOW — BFF

PROFILE



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

M7-A-1010-A8	ALIGNMENT AND PROFILE, REV 1, DATED 8-7-04,		
	PROJECT CONSULTING SERVICES, INC.		
M7-A-1011-A8	ALIGNMENT AND PROFILE, REV 1, DATED 8-7-04,		GEOTECHNICAL LABORATORY TEST REPORT DATED
	PROJECT CONSULTING SERVICES, INC.		5-5-05 FOR VIBRATORY CORE DATA
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-15, DATED		GEOPHYSICAL REPORT DATED 6-6-05 FOR
	MAY 2005; OCEAN SURVEYS, INC.		SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company

890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C	J.A.R	R.P.G

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 WEST ESPLANADE AVE., S., SUITE 100
METAIRIE, LA 70002-7400
(504) 833-5321 Fax (504) 833-4940
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" D.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C	APPROVED BY:	L.P
SCALE:	AS NOTED	PROJ ENGR.:	R.P.G
DATE:	5-2-06	PROJ MGR.:	
CHECKED BY:	J.A.R	SHEET:	1 OF 22

DWG. NO. M5-Z-2100 REV. A

05-02-06 1:39 04135A.DGN 1 C.J.F

	THIS DWG.	TOTAL
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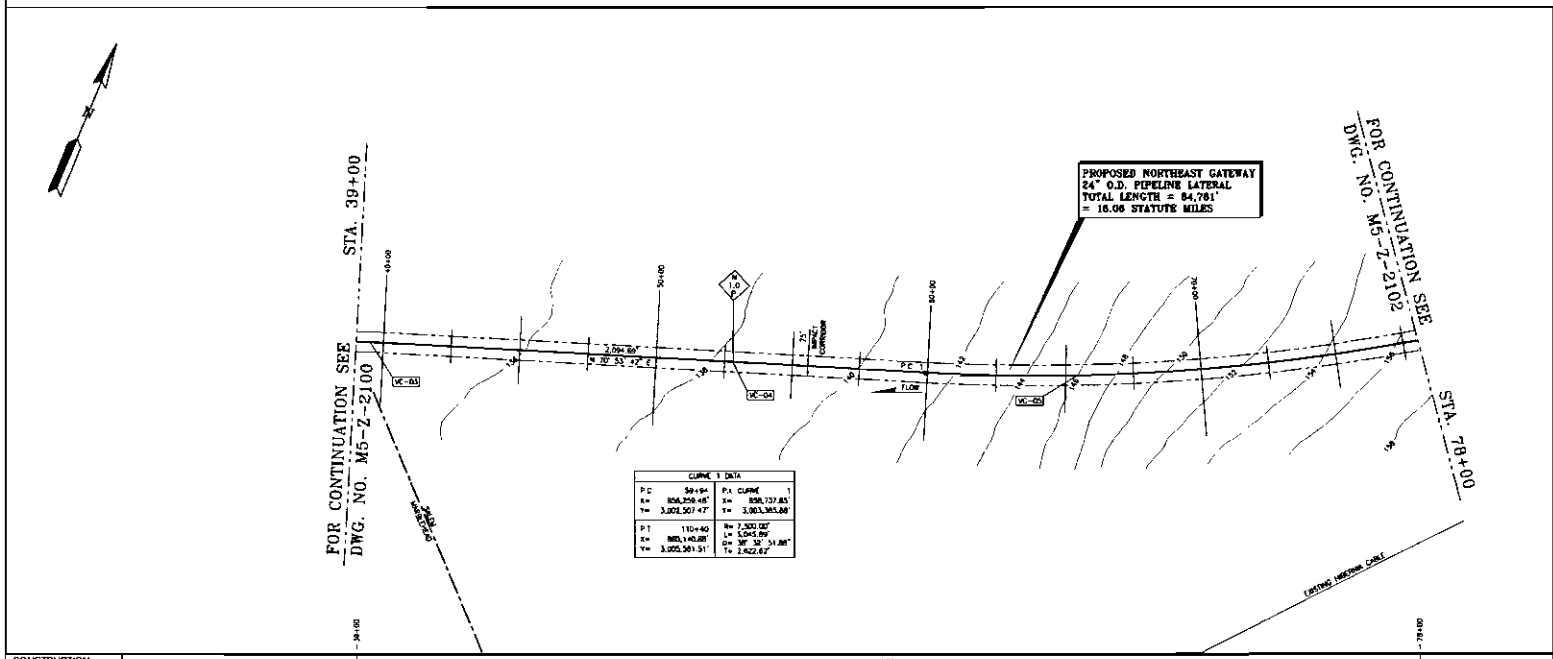

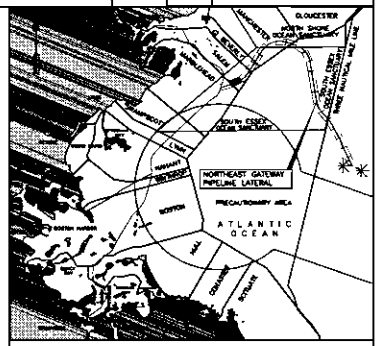

MAP INDEX

VC-00 - VIBRATORY CORE LOCATION

0.0 P - MILE POST REFERENCE (STATUTE MILES)

13M - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

NOTES:
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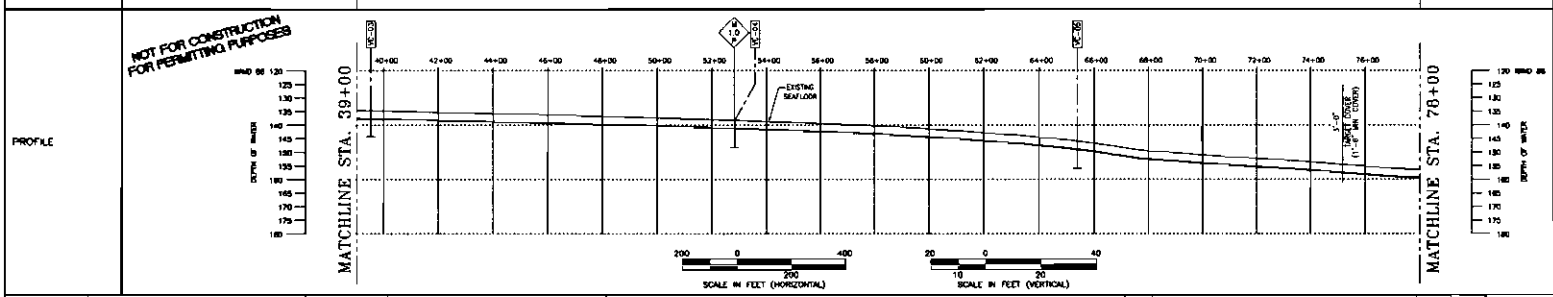
LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS



			GEOTECHNICAL LABORATORY TEST REPORT DATED
			5-5-05 FOR VIBRATORY CORE DATA
04C5084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED		GEOPHYSICAL REPORT DATED 6-6-05 FOR
	MAY 2005, OCEAN SURVEYS, INC		SIDE SCAN AND MAGNETIC ANOMALY INFORMATION.

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
A	5-2-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R	R.P.G

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 WEST ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7406
(504) 833-4351 Fax (504) 833-4940
www.projectconsulting.com

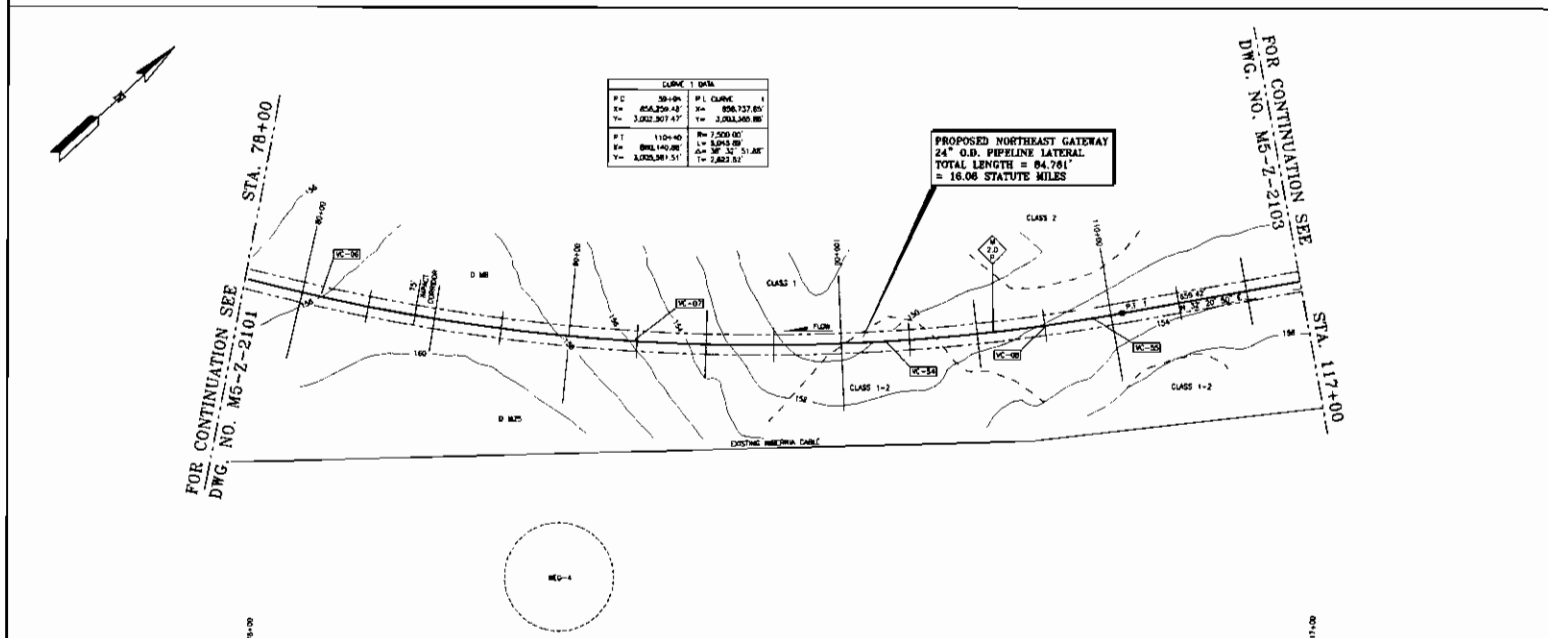
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

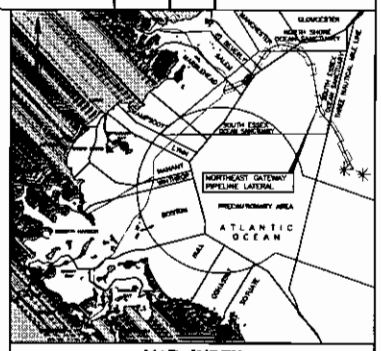
DRAWN BY:	C.J.C	APPROVED BY:	L.P
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R	SHEET:	2 OF 22

DWG. NO. M5-Z-2101 REV. A

05-02-06 11:54 04125\ACAD\ 1.DJ

	THIS DWG.	TOTAL
SALEM	3,900.00'	8,619.20' = 1.63 STATUTE MILES





MAP INDEX

VC-07 – VIBRATORY CORE LOCATION

9.0 – MILE POST REFERENCE (STATUTE MILES)

134 – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 – STATIONING ALONG CENTERLINE

– PROPOSED ROUTE CENTERLINE

– SEAFLOOR AVOIDANCE AREA WITH 200 FT RADIUS (AS INDICATED BY MEG-XX)

– SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM FINE TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

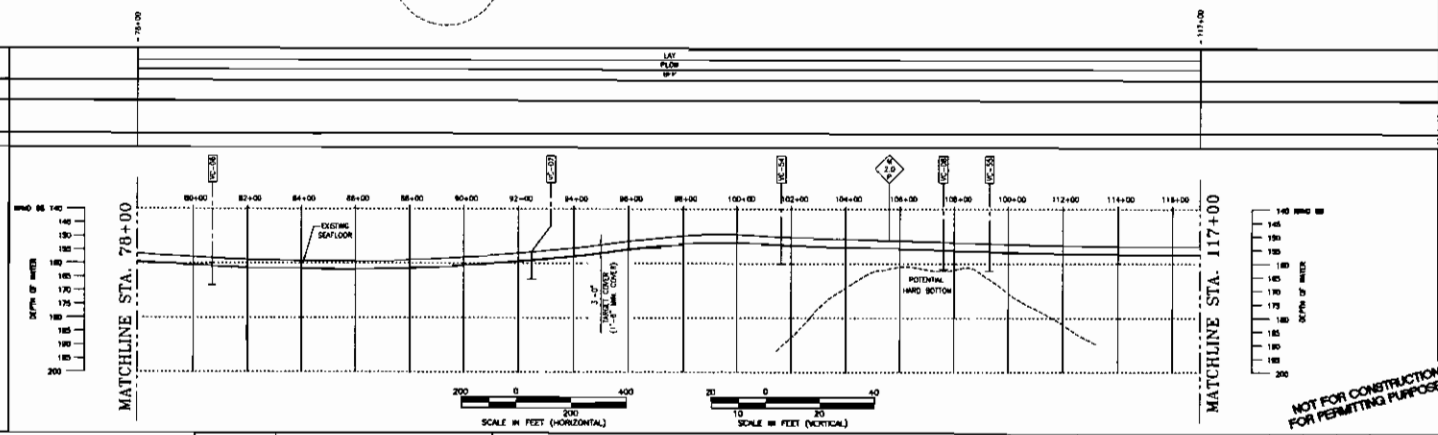
CLASS 2 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM MEDIUM SAND TO GRAVEL; MAY INCLUDE FRACTIONS OF FINER AND COARSER SEDIMENTS AS WELL AS INDIVIDUAL BOULDERS.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2345 (+0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BF" = BACKFILL PLOW
   CC MATS = CONCRETE MATS
   IM = IMPORTED MATERIAL (SAND BAGS, TREMIED SAND)

LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

		GEOTECHNICAL LABORATORY TEST REPORT DATED
		5-5-05 FOR VIBRATORY CORE DATA
D4E5084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED	GEOPHYSICAL REPORT DATED 6-9-05 FOR
	MAY 2005, OCEAN SURVEYS, INC.	SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C	J.A.R.	R.P.G.

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 EAST ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7400
(504) 835-5331 Fax (504) 835-6940
www.projectconsulting.com

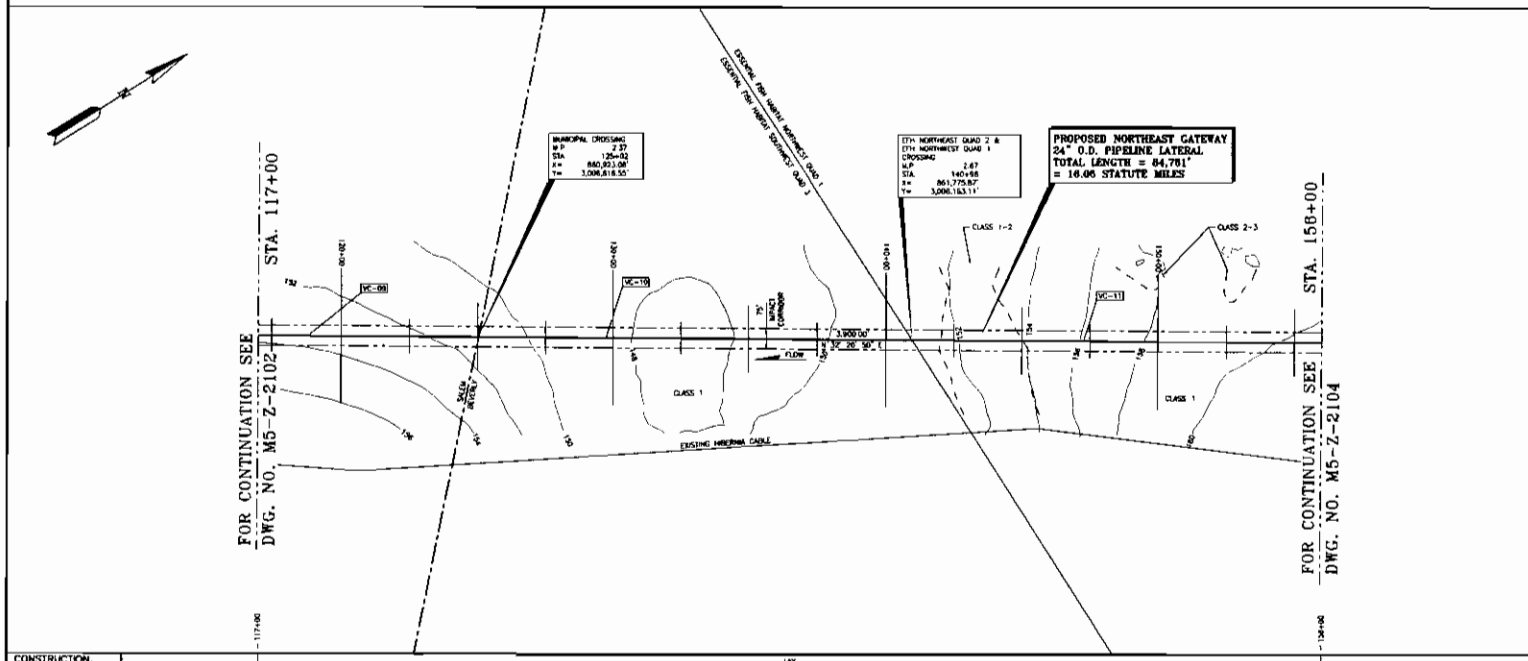
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

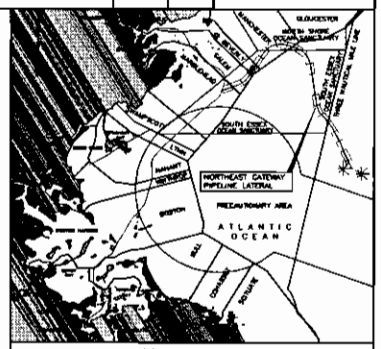
DRAWN BY:	C.J.C	APPROVED BY:	L.P
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R	SHEET:	3 OF 22

DWG. NO. M5-Z-2102 REV A

01-16-06 TEAM 04120140DE 1.CJF

	THIS DWG	TOTAL
SALEM	802.48'	8,619.20' = 1.63 STATUTE MILES
BEVERLY	3,097.52'	3,784.43' = 0.71 STATUTE MILES





MAP INDEX

VC-02 – VIBRATORY CORE LOCATION

0.0 – MILE POST REFERENCE (STATUTE MILES)

134 – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 – STATIONING ALONG CENTERLINE

– PROPOSED ROUTE CENTERLINE

– SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CLASS 2 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM MEDIUM SAND TO GRAVEL; MAY INCLUDE FRACTIONS OF FINER AND COARSER SEDIMENTS AS WELL AS INDIVIDUAL BOULDERS.

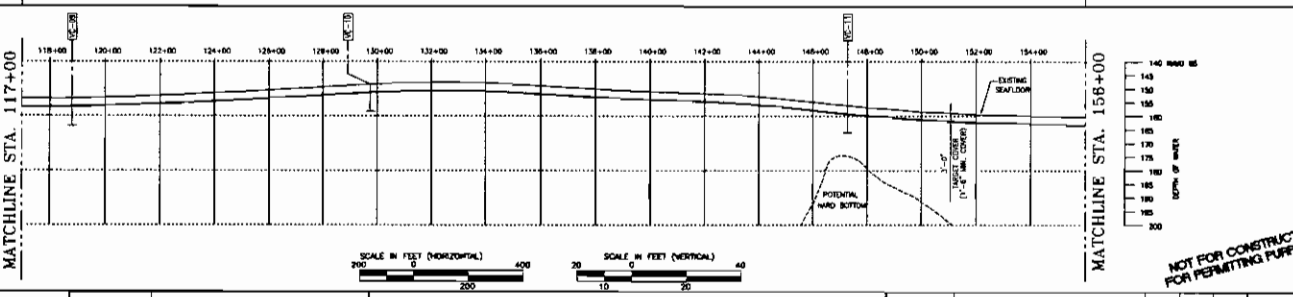
CLASS 3 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM GRAVEL TO BOULDERS; MAY INCLUDE FRACTIONS OF FINER SEDIMENTS WITH BEDROCK IN THE SHALLOW SUBSURFACE.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET
   VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED
3. REFERENCE http://www.mass.gov/mgis/mgis.htm FOR MUNICIPALITY BOUNDARIES (OFFSHORE), TOWNSHIP BOUNDARIES AND OCEAN SANCTUARIES
4. TEST PRESSURE WILL BE 2945 (+0, -25) PSIG.
5. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP = BACKFILL PLOW
   CC MATS = CONCRETE MATS
   IM = IMPORTED MATERIAL (SAND BAGS, TREMIED SAND)

LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

			GEOTECHNICAL LABORATORY TEST REPORT DATED
			5-5-05 FOR VIBRATORY CORE DATA.
04C5084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED		GEOPHYSICAL REPORT DATED 6-6-05 FOR
	1 MAY 2005, OCEAN SURVEYS, INC.		SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3240 WEST BOYSLANDING AVE., S., SUITE 500
METAIRIE, LA 70002-7400
(504) 833-0321 Fax (504) 835-4040
www.projectconsulting.com

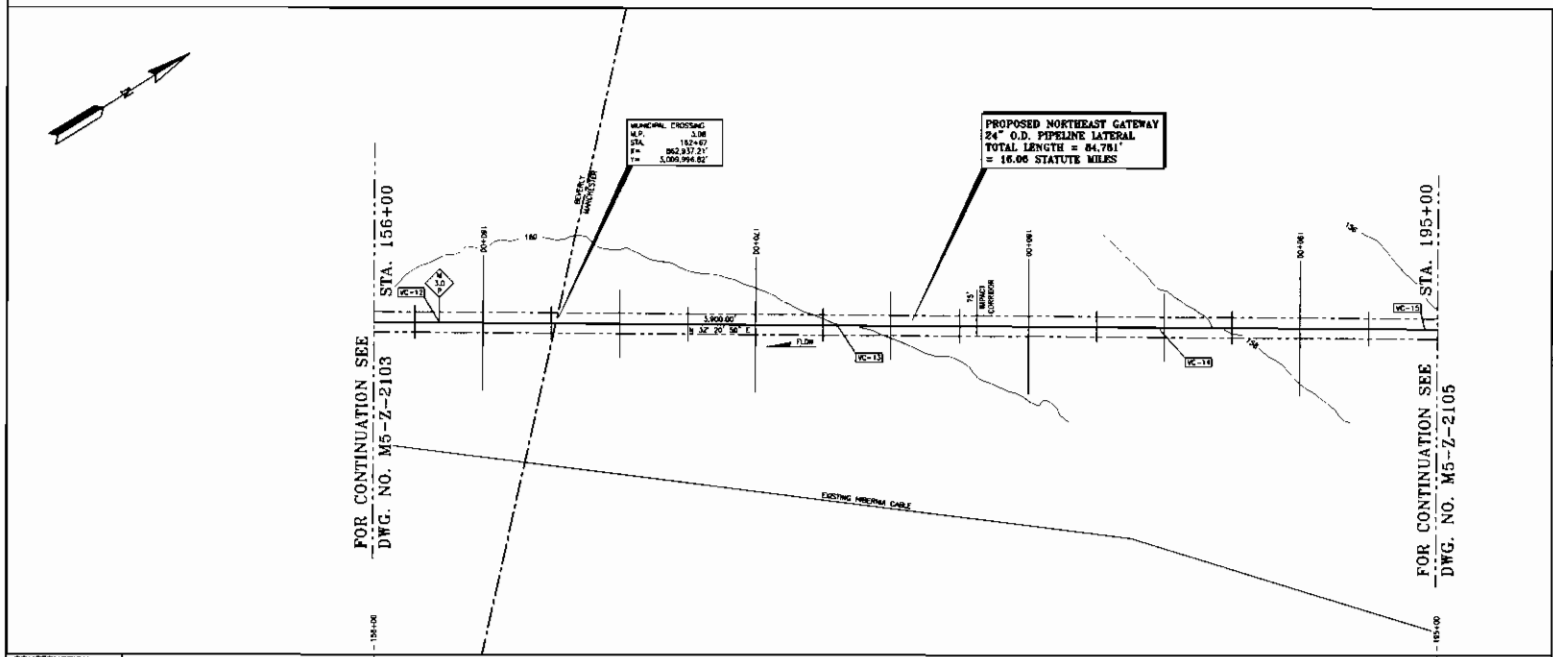
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

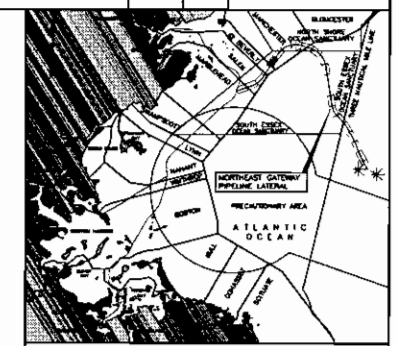
DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R.	SHEET	4 OF 22

DWG. NO. M5-Z-2103 REV. A

05-02-06 11:44 04C5084CE 1.CJF

	THIS DWG.	TOTAL
MANCHESTER	3,233.10'	17,119.29' = 3.24 STATUTE MILES
BEVERLY	656.90'	3,764.42 = 0.71 STATUTE MILES





MAP INDEX

- VIBRATORY CORE LOCATION
- MILE POST REFERENCE (STATUTE MILES)
- HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88
- STATIONING ALONG CENTERLINE
- PROPOSED ROUTE CENTERLINE
- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

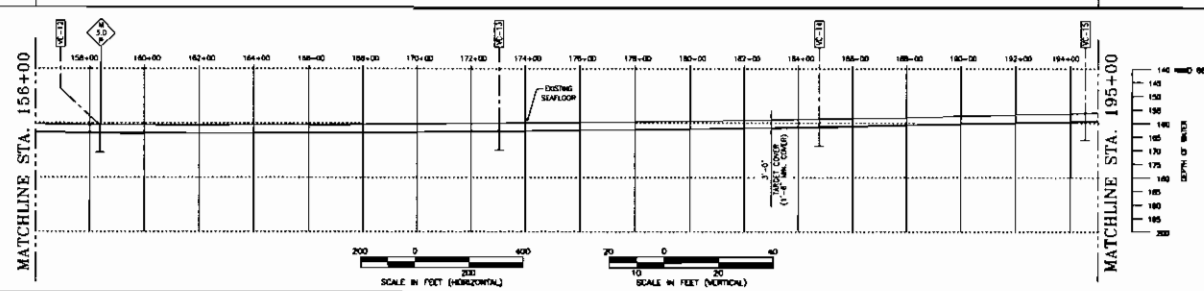
CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS

CONSTRUCTION, TRENCHING, AND COVER METHODS

LAY
PLOW
BFP

PROFILE

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES



NOTES

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET. VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED
3. REFERENCE: http://www.mass.gov/mgis.htm FOR MUNICIPALITY BOUNDARIES (OFFSHORE), TOWNSHIP BOUNDARIES AND OCEAN SANCTUARIES.
4. TEST PRESSURE WILL BE 2545 (-0, +25) PSIG.
5. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP - BACKFILL PLOW
   CC MATS - CONCRETE MATS
   M - IMPORTED MATERIAL (SAND BAGS, TREMIED SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3300 WEST ESPLANADE AVE., S., SUITE 600
METAIRIE, LA 70002-7408
(504) 832-0321 Fax (504) 832-4040
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C	APPROVED BY:	L.P
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R	SHEET:	5 OF 22

DWG. NO. M5-Z-2104 REV. A

			GEOTECHNICAL LABORATORY TEST REPORT DATED
			5-5-05 FOR VIBRATORY CORE DATA.
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED		GEOPHYSICAL REPORT DATED 6-6-05 FOR
	MAY 2005; OCEAN SURVEYS, INC.		SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

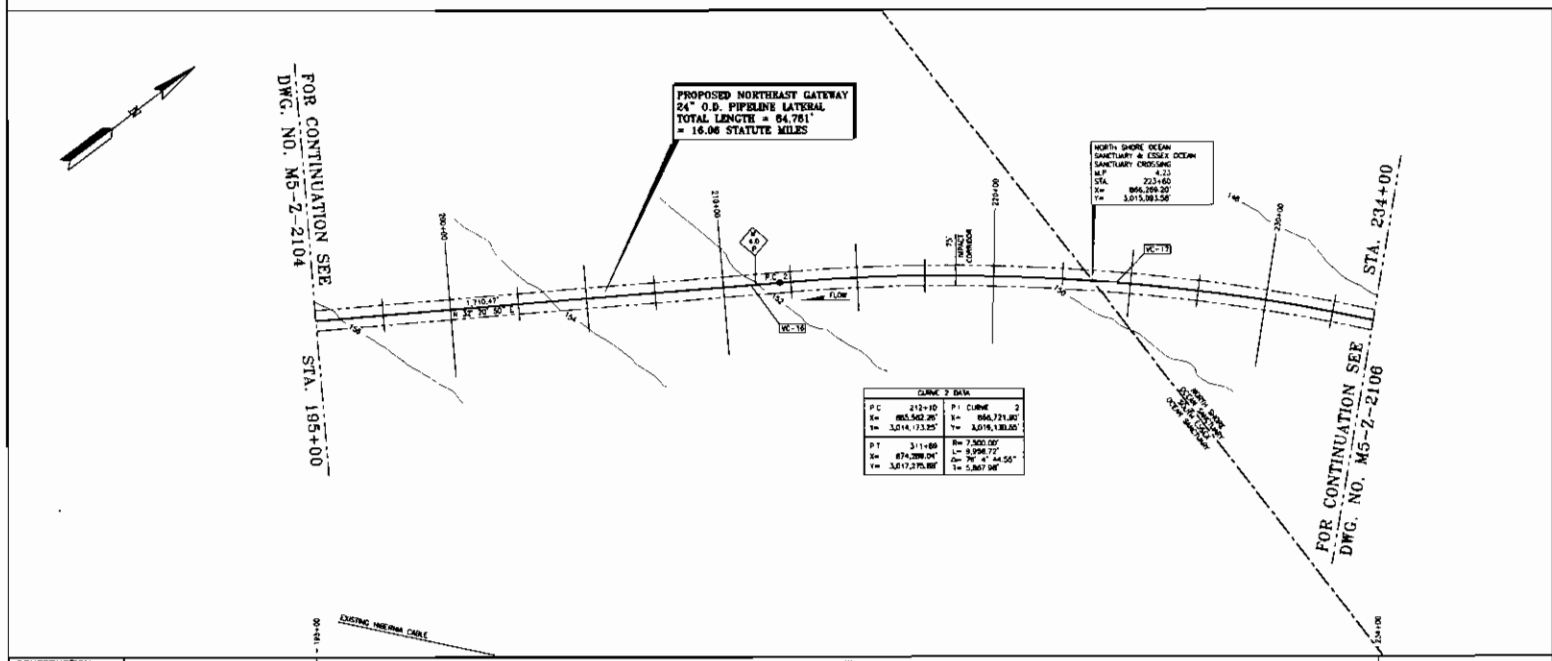
Duke Energy Gas Transmission

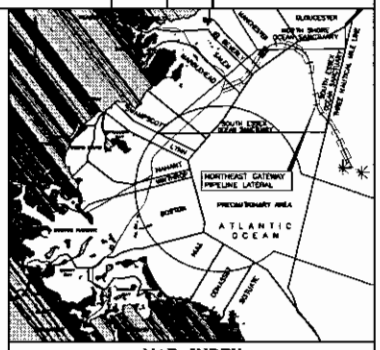
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C	J.A.R	R.P.G

REVISIONS

	THIS DWG.	TOTAL
MANCHESTER	3,900.00'	17,119.29' = 3.24 STATUTE MILES





MAP INDEX

VC-02 – VIBRATORY CORE LOCATION

0.0 – MILE POST REFERENCE (STATUTE MILES)

134 – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 – STATIONING ALONG CENTERLINE

– PROPOSED ROUTE CENTERLINE

– SEDIMENT TYPE INTERFACE

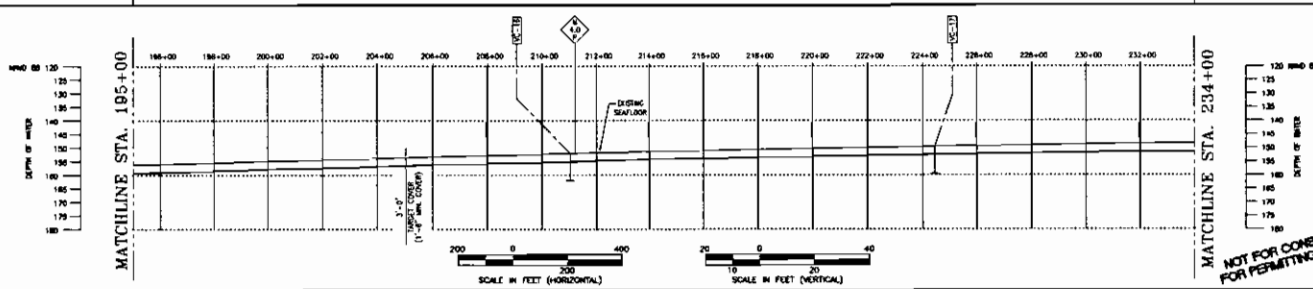
SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CONSTRUCTION, TRENCHING, AND COVER METHODS

LAY
PLOW
BFP

PROFILE



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED
3. REFERENCE http://www.mass.gov/mgis.htm FOR MUNICIPALITY BOUNDARIES (OFFSHORE), TOWNSHIP BOUNDARIES AND OCEAN SACTUARIES
4. TEST PRESSURE WILL BE 2545 (-0, +25) PSIG.
5. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP – BACKFILL PLOW
   CC MATS – CONCRETE MATS
   IM – IMPORTED MATERIAL (SAND BAGS, TRENNED SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3200 WEST ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7408
(504) 835-5381 Fax (504) 835-9940
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY	J.A.R.	SHEET	6 OF 22

DWG. NO. M5-Z-2105 REV. A

		GEOTECHNICAL LABORATORY TEST REPORT DATED 5-5-05 FOR VIBRATORY CORE DATA
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED MAY 2005, OCEAN SURVEYS, INC.	GEOPHYSICAL REPORT DATED 6-6-05 FOR SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

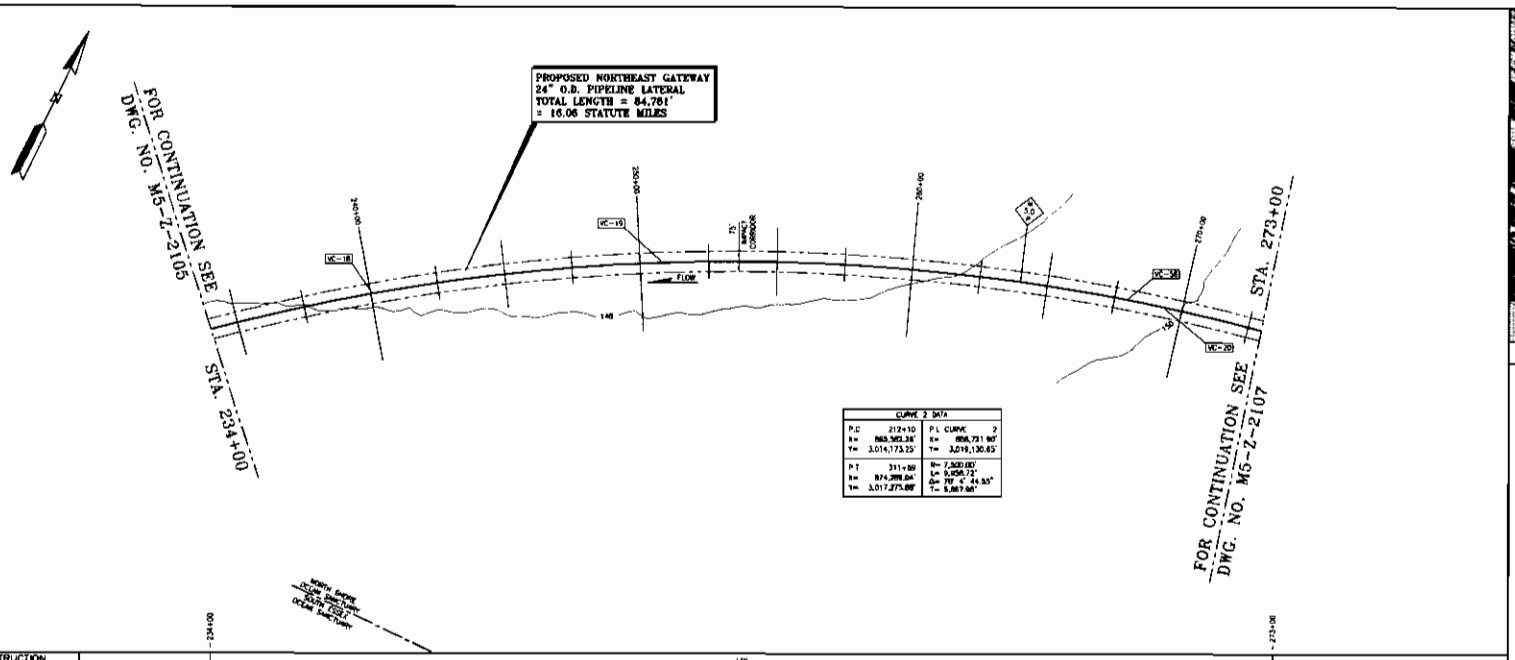
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

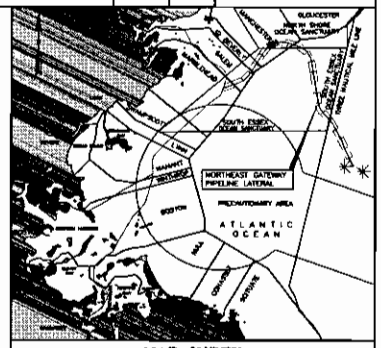
REVISIONS

05-02-06 11:34 04125\ADDE 1 C.J.C.

	THIS DWG.	TOTAL
MANCHESTER	3,900.00'	17,119.29' = 3.24 STATUTE MILES



CURVE 2 DATA	
P.C. 212+10	P.I. CURVE 2
E= 868,363.38'	E= 868,731.90'
N= 3,014,173.25'	N= 3,019,130.85'
P.T. 311+89	R= 7,500.00'
E= 874,288.04'	S= 9,958.73'
N= 3,017,275.88'	Δ= 76° 4' 44.55"
	T= 5,867.68'



MAP INDEX

VC-02 – VIBRATORY CORE LOCATION

6.0 – MILE POST REFERENCE (STATUTE MILES)

134 – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 – STATIONING ALONG CENTERLINE

– PROPOSED ROUTE CENTERLINE

– SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS

NOTES:

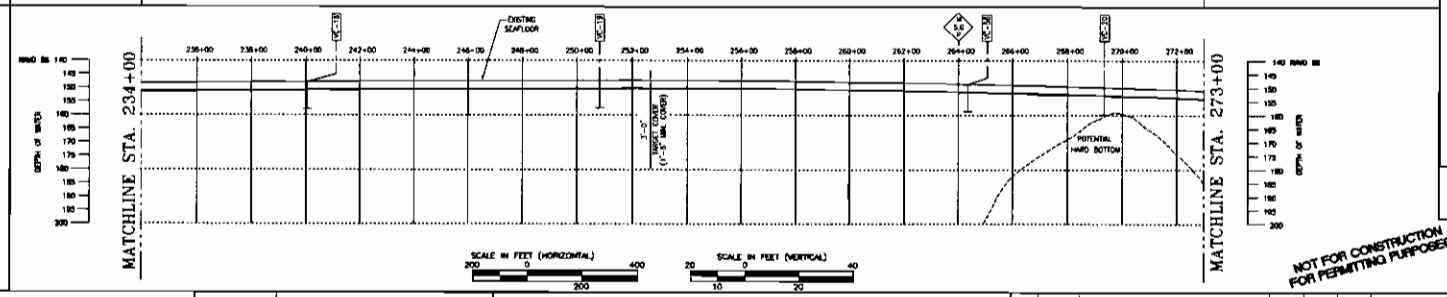
1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET. VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED
3. REFERENCE http://www.mass.gov/mgis.htm FOR MUNICIPALITY BOUNDARIES (OFFSHORE), TOWNSHIP BOUNDARIES AND OCEAN SANCTUARIES
4. TEST PRESSURE WILL BE 2548 (-0, +25) PSIG
5. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS.
   BFP - BACKFILL PLOW
   CC MATS - CONCRETE MATS
   IM - IMPORTED MATERIAL (SAND BAGS, PROBED SAND)

LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS

LAY
PLOW
BFP

PROFILE



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

REFERENCE DRAWINGS	
	GEOTECHNICAL LABORATORY TEST REPORT DATED
	5-5-05 FOR VIBRATORY CORE DATA,
G4ES084 PIPELINE LATERAL ALIGNMENT, SHEET 1-15, DATED	GEOPHYSICAL REPORT DATED 6-6-05 FOR
MAY 2005, OCEAN SURVEYS, INC	SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR CONSTRUCTION	CJC	JAR	RPG

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 WEST ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7400
(504) 835-5331 Fax (504) 833-4640
www.projectconsulting.com

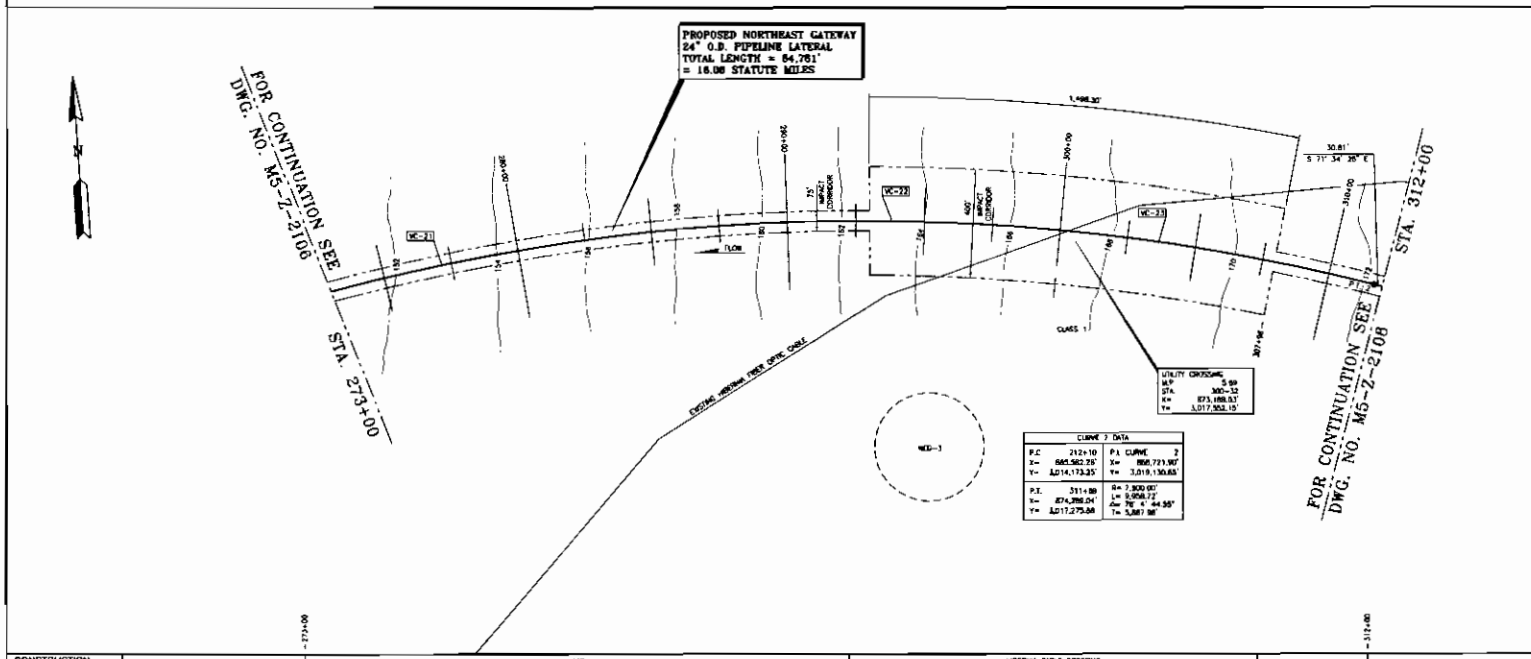
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

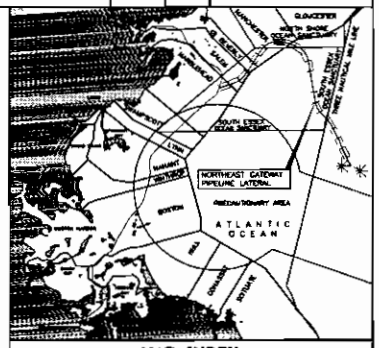
DRAWN BY:	J.E.F.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R.	SHEET:	7 OF 22

DWG. NO. M5-Z-2106 REV. A

05-02-06 11:31 G4ES084.DGN

	THIS DWG.	TOTAL
MANCHESTER	3,900.00'	17,110.29' = 3.24 STATUTE MILES





MAP INDEX

VC-02 - VIBRATORY CORE LOCATION

MILE POST REFERENCE (STATUTE MILES)

134 - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

D+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEAFLOOR AVOIDANCE AREA WITH 200 FT RADIUS (AS INDICATED BY NED-XX)

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

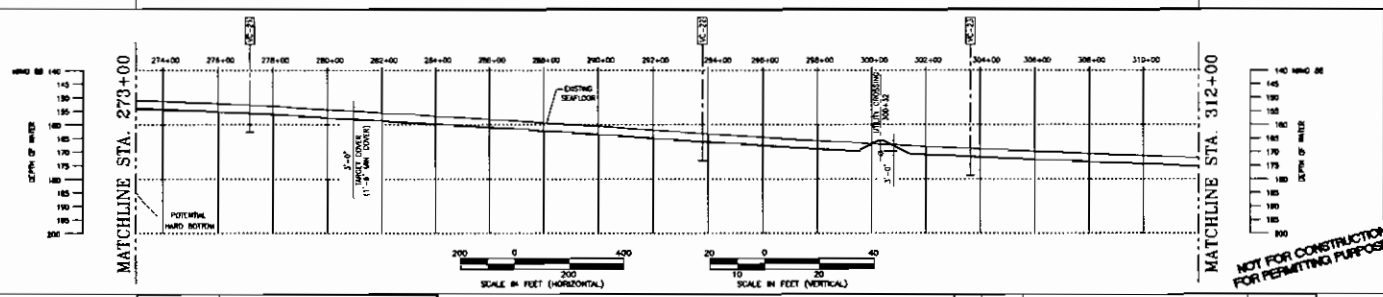
NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET. VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2340 (+0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS.
   BFP - BACKFILL PLOW
   CC MATS - CONCRETE MATS
   IM - IMPORTED MATERIAL (SAND BACK, PREMIXED SLAG)
5. CONTRACTOR TO PROVIDE CABLE CROSSING PLAN WHICH MINIMIZES TRANSITIONS. PLAN SHALL BE SUBMITTED FOR APPROVAL.

LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS	LAY PLOW BFP	HIBERNIA CABLE CROSSING (SEE NOTE 5)

PROFILE



REFERENCE DRAWINGS		
DHC5084	PIPELINE LATERAL ALIGNMENT, SHEET 1-15, DATED MAY 2005; OCEAN SURVEYS, INC.	GEOTECHNICAL LABORATORY TEST REPORT DATED 5-5-05 FOR VIBRATORY CORE DATA. GEOPHYSICAL REPORT DATED 6-6-05 FOR SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPROV'D.
A	5-2-06	ISSUED FOR PERMITTING	CJC	JAR	RPG

REVISIONS

PROJECT CONSULTING SERVICES, INC
3300 WEST ESPLANADE AVE., S., SUITE 300
METAIRIE, LA 70002-7409
(504) 888-5581 Fax (504) 888-4445
www.projectconsulting.com

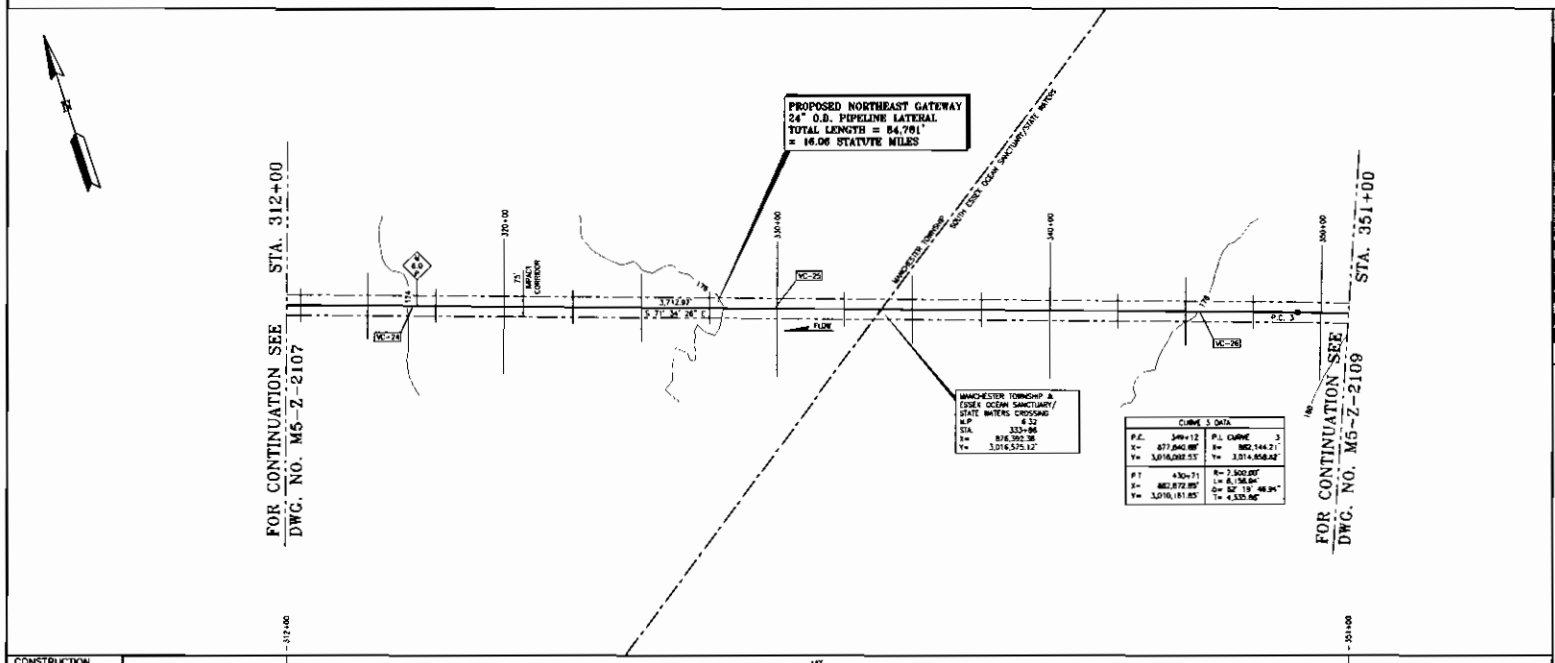
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

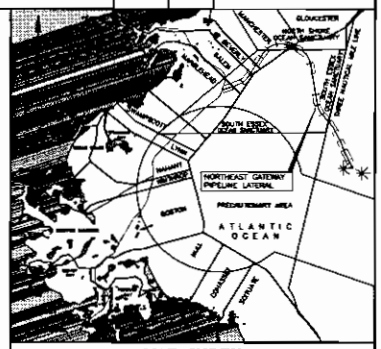
Drawn By:	CJC	APPROVED BY:	LP.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	JAR	SHEET	8 OF 22

DWG. NO. M5-Z-2107 REV. A

05-02-06 11:23 6413DWGS 1 C.J.C.

	THIS DWG.	TOTAL
MANCHESTER	2,186.19'	17,319.29' = 3.24 STATUTE MILES
STATE	1,713.81'	32,843.33' = 6.18 STATUTE MILES





MAP INDEX

VC-02 – VIBRATORY CORE LOCATION

6.0 – MILE POST REFERENCE (STATUTE MILES)

1.34 – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 – STATIONING ALONG CENTERLINE

– PROPOSED ROUTE CENTERLINE

– SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983 U.S. FEET VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. REFERENCE http://www.mass.gov/eopa/bdm FOR MUNICIPALITY BOUNDARIES (OFFSHORE), TOWNSHIP BOUNDARIES AND OCEAN SANCTUARIES.
4. REFERENCE http://mcz.harvard.edu/cgi-bin/mcz/mcz.cgi?mcz=mcz.frm FOR STATE/FEDERAL BOUNDARY (3 MILE LINE).
5. TEST PRESSURE WILL BE 2945 (-0, +25) PSIG.
6. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP = BACKFILL PLOW
   CC MATS = CONCRETE MATS
   M = IMPORTED MATERIAL (SAND BAGS, FRENCH SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3306 WEST BEAUREGARD AVE., S., SUITE 500
METAIRIE, LA 70002-7408
(504) 883-6381 Fax (504) 883-6640
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C	APPROVED BY:	L.P
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R	SHEET:	9 OF 22

DWG. NO. M5-Z-2108 REV. A

			GEOTECHNICAL LABORATORY TEST REPORT DATED
			5-5-05 FOR VIBRATORY CORE DATA
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED		GEOPHYSICAL REPORT DATED 8-8-05 FOR
	MAY 2005, OCEAN SURVEYS, INC.		SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

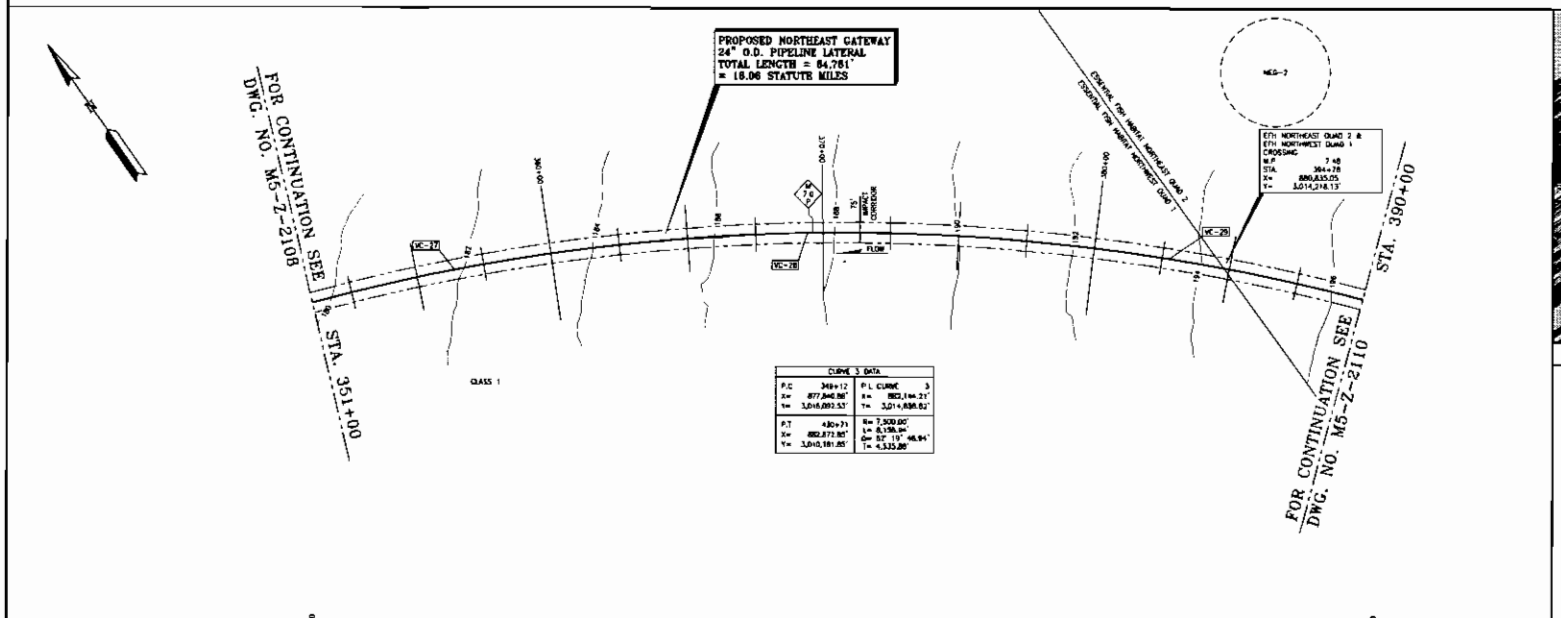
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

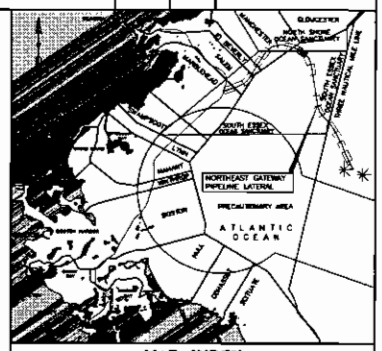
NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C	J.A.R	R.P.G

REVISIONS

04125-NOE 1.1.dif
05-02-06 11:07

	THIS DWG.	TOTAL
STATE	3,900.00'	32,643.33' = 6.18 STATUTE MILES





MAP INDEX

- VC-03 – VIBRATORY CORE LOCATION
- 7.0 – MILE POST REFERENCE (STATUTE MILES)
- 1M – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88
- 0+00 – STATIONING ALONG CENTERLINE
- PROPOSED ROUTE CENTERLINE
- SEAFLOOR AVOIDANCE AREA WITH 200 FT RADIUS (AS INDICATED BY MEG-XX)
- SEDIMENT TYPE INTERFACE

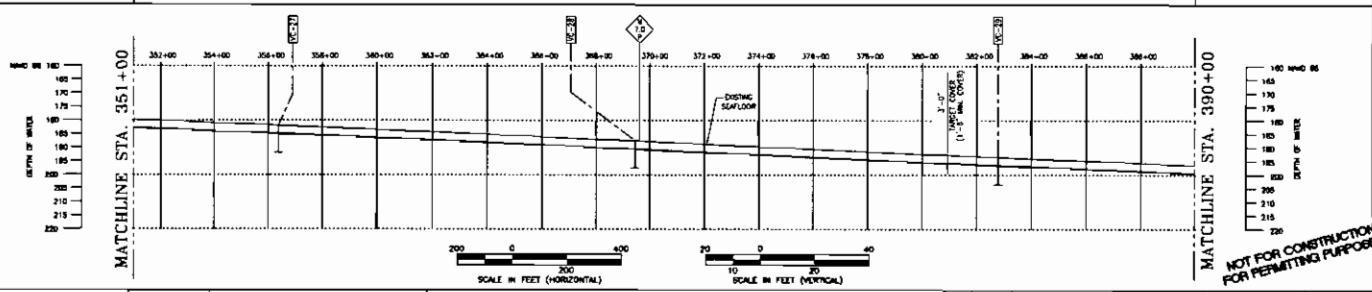
SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CONSTRUCTION, TRENCHING, AND COVER METHODS

LAY
PLOW
BFP

PROFILE



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2543 (-0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP - BACKFILL PLOW
   CC MATS - CONCRETE MATS
   IM - IMPORTED MATERIAL (SAND BAGS, TREMIED SAND)

LEGEND & NOTES

			GEOTECHNICAL LABORATORY TEST REPORT DATED 5-5-05 FOR VIBRATORY CORE DATA.
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED MAY 2005, OCEAN SURVEYS, INC		GEOPHYSICAL REPORT DATED 6-6-05 FOR SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	CJC	JAR	RPG

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 WEST ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7408
(504) 833-8383 Fax (504) 833-4440
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	CJC	APPROVED BY:	LP
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	JAR	SHEET:	10 OF 22

DWG. NO. M5-Z-2109 REV. A

01-16-06 11:22 DATE/SHEET: 1 F.JC

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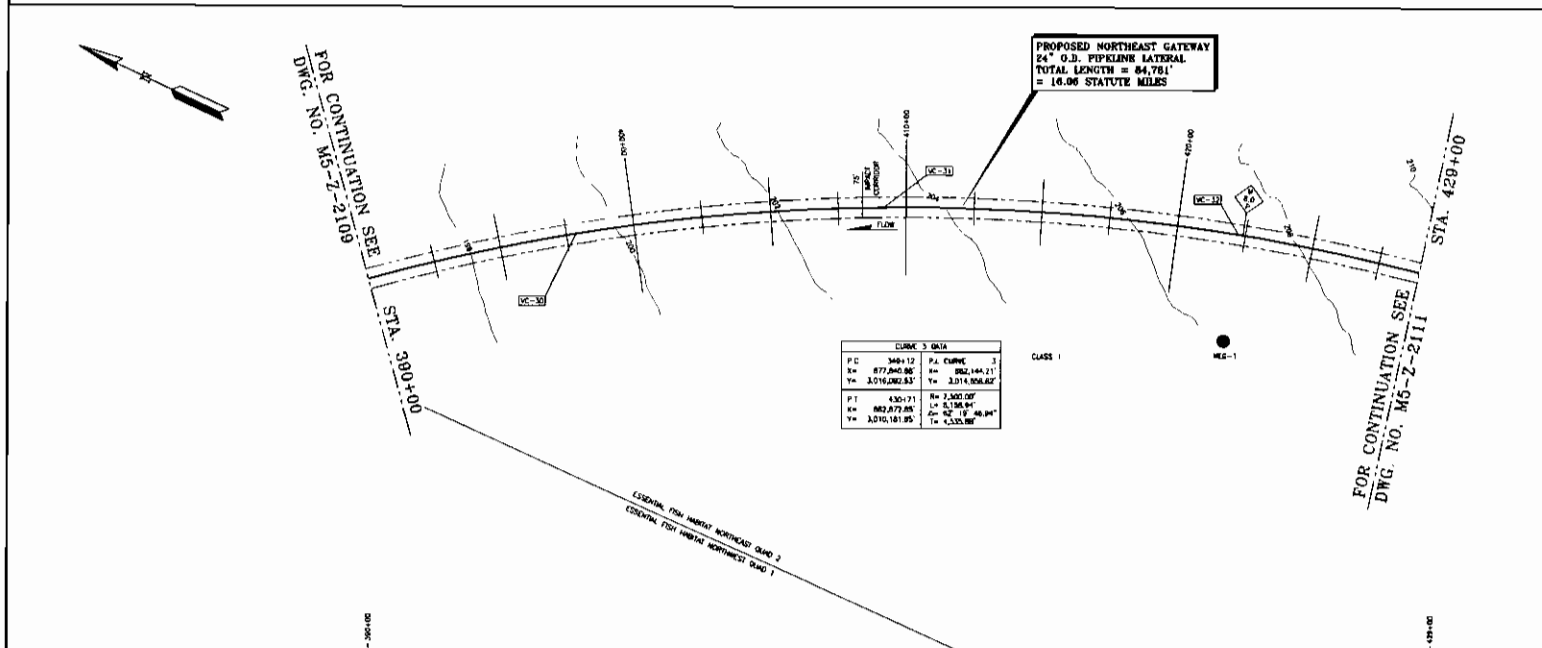
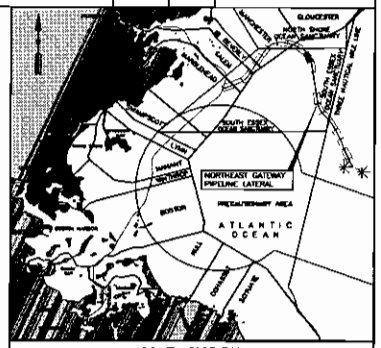


CURVE 3 DATA	
P.C. 346+12	P.I. CURVE 3
X= 877,840.86'	X= 882,144.21'
Y= 3,016,082.83'	Y= 3,014,856.82'
P.T. 430+71	R= 7,300.00'
X= 882,872.85'	L= 8,158.94'
Y= 3,010,181.95'	Δ= 62° 19' 46.94"
	T= 4,535.88'



MAP INDEX

- VC-32 – VIBRATORY CORE LOCATION
- 0.0 – MILE POST REFERENCE (STATUTE MILES)
- 1M – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88
- 0+00 – STATIONING ALONG CENTERLINE
- PROPOSED ROUTE CENTERLINE
- SEAFLOOR OBSTRUCTION (AS INDICATED BY NEG-XX)
- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

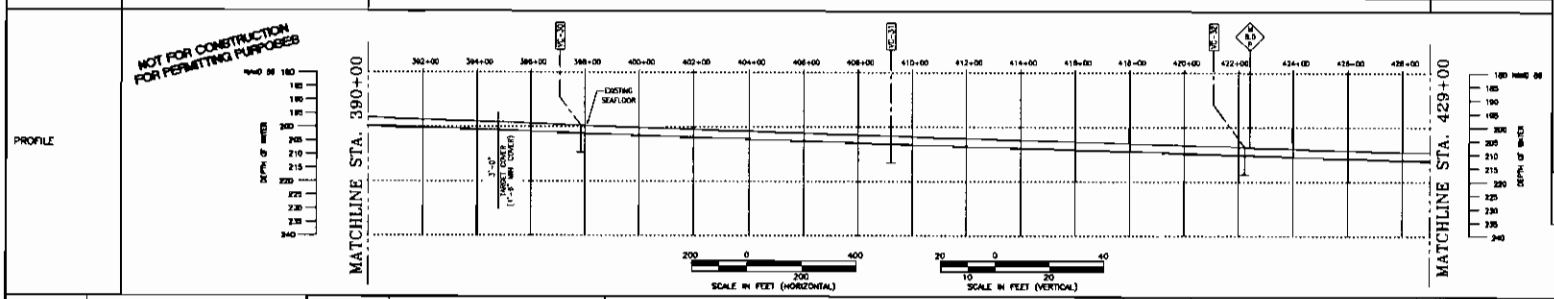
CLASS 1 – SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 3001, NORTH AMERICAN DATUM 1983, U.S. FEET
   VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. REFERENCE http://www.mass.gov/mgis.htm FOR MUNICIPALITY BOUNDARIES (IF IGNORE) TOWNSHIP BOUNDARIES AND OCEAN SANCTUARIES.
4. REFERENCE http://maatc.ctr.berta.nasa.gov/cwd/mmsmed.htm FOR STATE/FEDERAL BOUNDARY (3 MILE LINE)
5. TEST PRESSURE WILL BE 2345 (-0, +25) PSIG.
6. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP – BACKFILL PLOW
   CC MAT – CONCRETE MATS
   IM – IMPORTED MATERIAL (SAND BACK, PEBBLED SAND)

LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS



REFERENCE DRAWINGS

		GEOTECHNICAL LABORATORY TEST REPORT DATED
		5-5-05 FOR VIBRATORY CORE DATA.
04CS084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED	GEOPHYSICAL REPORT DATED 6-6-05 FOR
	MAY 2005, OCEAN SURVEYS, INC.	SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 WEST BANKHEAD AVE., S., SUITE 500
METAIRIE, LA 70006-7499
(504) 833-5333 Fax (504) 833-4440
www.projectconsulting.com

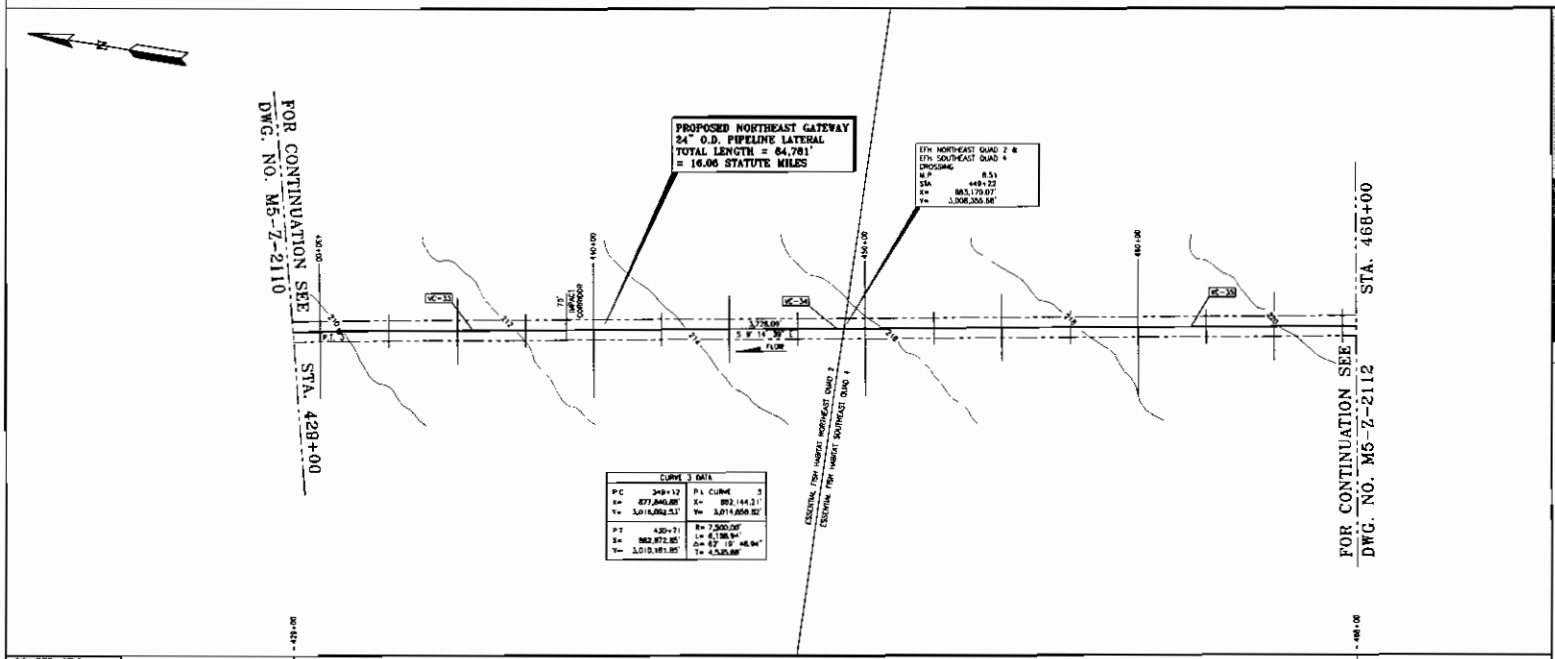
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R.	SHEET:	10 OF 22

DWG. NO. M5-Z-2110 REV. A

05-02-06 15:40 04TS1.MODE 1 F-F

	THIS DWG	TOTAL
STATE	3,900.00'	32,843.33' = 6.18 STATUTE MILES

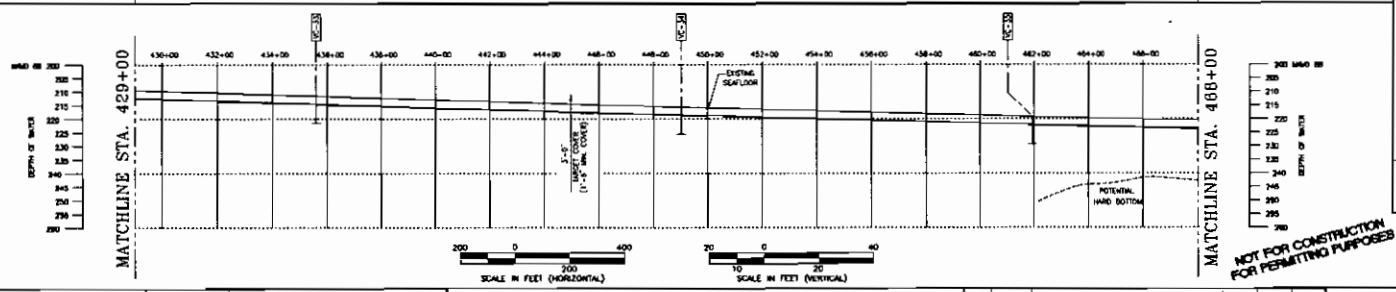


CURVE 3 DATA	
P.C. 349+12	P.I. CURVE 3
X= 877,840.88'	X= 882,144.21'
Y= 3,010,862.53'	Y= 3,011,000.92'
P.T. 420+71	R= 7,500.00'
X= 882,872.85'	L= 4,138.94'
Y= 3,010,181.85'	Δ= 43° 15' 46.94"
	T= 4,525.88'

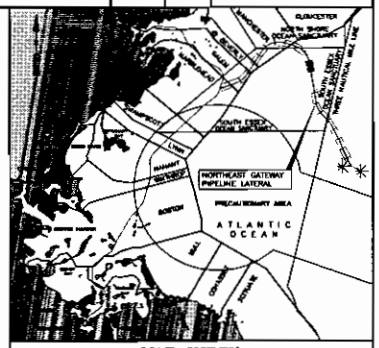
CONSTRUCTION, TRENCHING, AND COVER METHODS

LAY
PLOW
BFP

PROFILE



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES



MAP INDEX

VC-32 - VIBRATORY CORE LOCATION

0.0 - MILE POST REFERENCE (STATUTE MILES)

134 - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. REFERENCE http://www.mass.gov/mgis/shp FOR MUNICIPALITY BOUNDARIES (OFFSHORE), TOWNSHIP BOUNDARIES AND OCEAN SANCTUARIES
4. REFERENCE http://nsdiscoverer.noaa.gov/dsdl/mbon/el.htm FOR STATE/FEDERAL BOUNDARY (3 MILE LINE).
5. TEST PRESSURE WILL BE 2345 (-0, +25) PSIG
6. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS:
   BFP - BACKFILL PLOW
   CC MATS - CONCRETE MATS
   IM - IMPORTED MATERIAL (SAND BACS, PREMIXED SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC
3000 WEST ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7436
(504) 833-6381 Fax (504) 833-4040
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.S.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R.	SHEET:	12 OF 22

DWG. NO. M5-Z-2111 REV. A

		GEOTECHNICAL LABORATORY TEST REPORT DATED
		5-5-05 FOR VIBRATORY CORE DATA.
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED	GEOPHYSICAL REPORT DATED 8-8-05 FOR
	MAY 2005, OCEAN SURVEYS, INC	SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

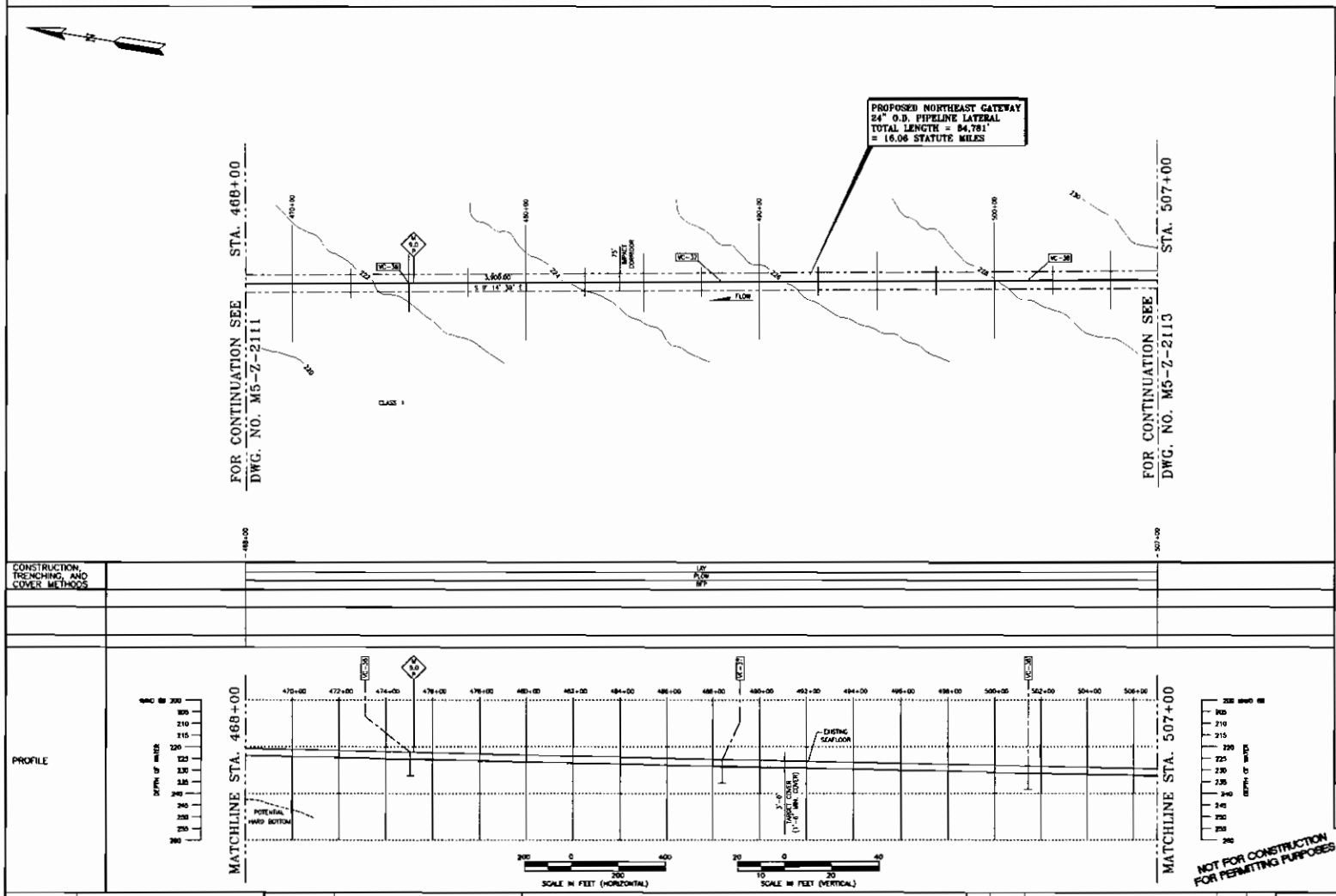
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

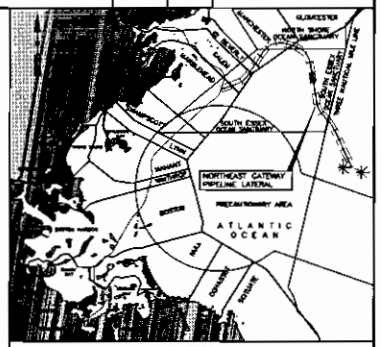
NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.S.

REVISIONS

05-02-06 10:36 04ES084CR 1 of 1

	THIS DWG	TOTAL
STATE	3,900.00'	32,643.33' = 6.18 STATUTE MILES





MAP INDEX

VC-00 - VIBRATORY CORE LOCATION

- MILE POST REFERENCE (STATUTE MILES)

134 - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

D+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET. VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED
3. TEST PRESSURE WILL BE 2145 (-0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS:
   BFP - BACKFILL PLOW
   CC MATS - CONCRETE MATS
   IM - IMPORTED MATERIAL (SAND BAGS, TRENCH SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3300 WEST BANKHEAD AVE., S., SUITE 500
METAIRIE, LA 70002-7400
(504) 833-4551 Fax (504) 833-4940
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R	SHEET:	13 OF 22

DWG. NO. M5-Z-2112 REV. A

		GEOTECHNICAL LABORATORY TEST REPORT DATED
		5-5-05 FOR VIBRATORY CORE DATA.
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED	GEOPHYSICAL REPORT DATED 6-4-05 FOR
	MAY 2005, OCEAN SURVEYS, INC	SIDE SCAN AND MAGNETIC ANOMALY INFORMATION.

REFERENCE DRAWINGS

Duke Energy Gas Transmission

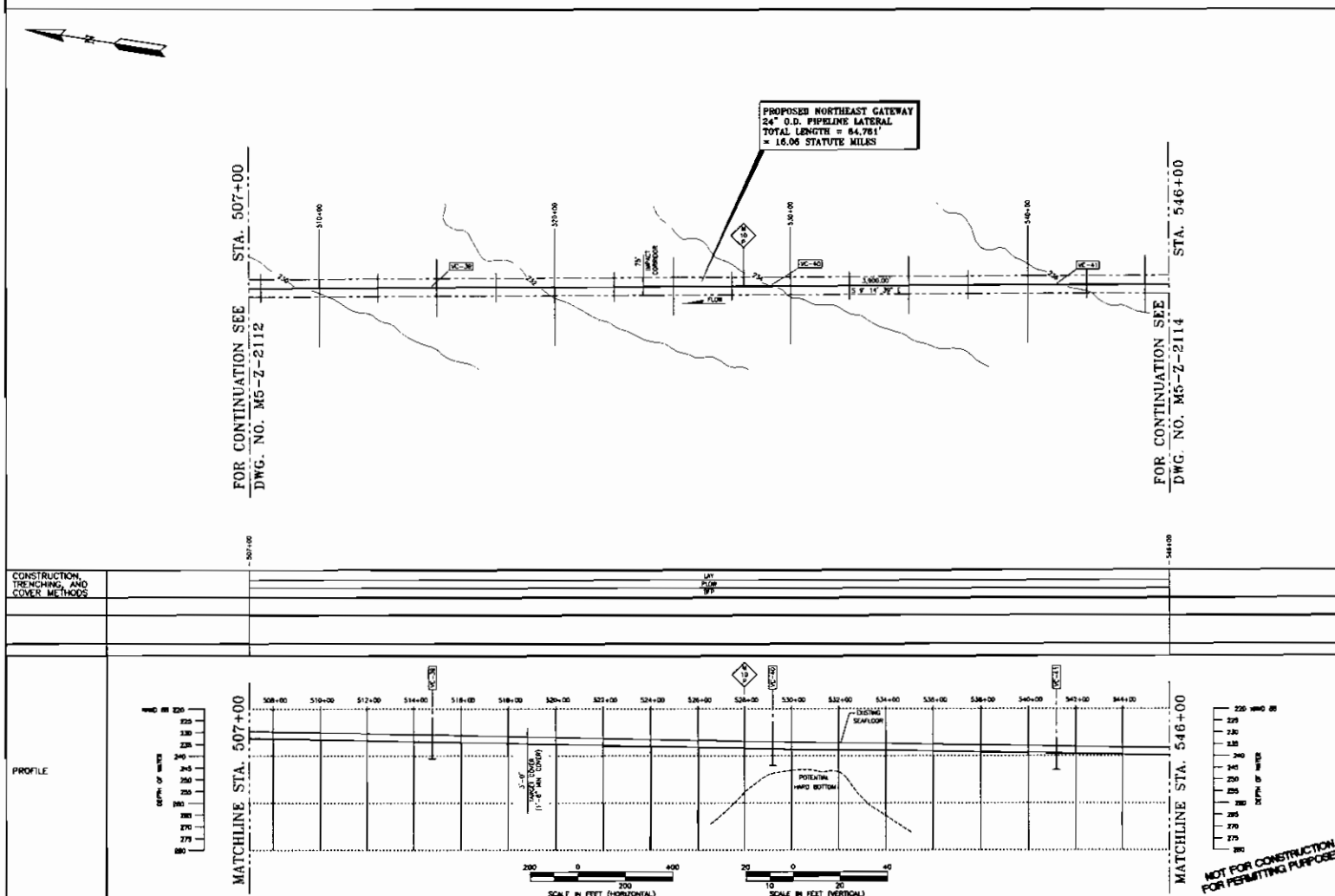
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C	J.A.R	R.P.G

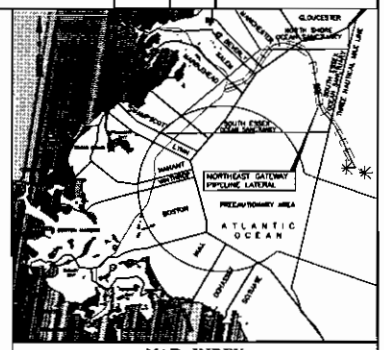
REVISIONS

05-02-06 10:23 04120.MCR 1 C.J.C

	THIS DWG.	TOTAL
STATE	5,900.00'	32,643.33' = 6.18 STATUTE MILES



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES



MAP INDEX

VC-02 - VIBRATORY CORE LOCATION

M 0.0 P - MILE POST REFERENCE (STATUTE MILES)

-13A- - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2545 (-0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS.
   BFP - BACKFILL PLOW
   CC WATS - CONCRETE MATS
   M - IMPORTED MATERIAL (SAND BAGS, TREMIED SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3200 NEW ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7400
(504) 833-6321 FAX (504) 833-6948
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R	SHEET:	14 OF 22

DWG. NO. M5-Z-2113 REV A

			GEOTECHNICAL LABORATORY TEST REPORT DATED 5-5-05 FOR VIBRATORY CORE DATA.
04C5084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED MAY 2005, OCEAN SURVEYS, INC.		GEOPHYSICAL REPORT DATED 6-4-05 FOR SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

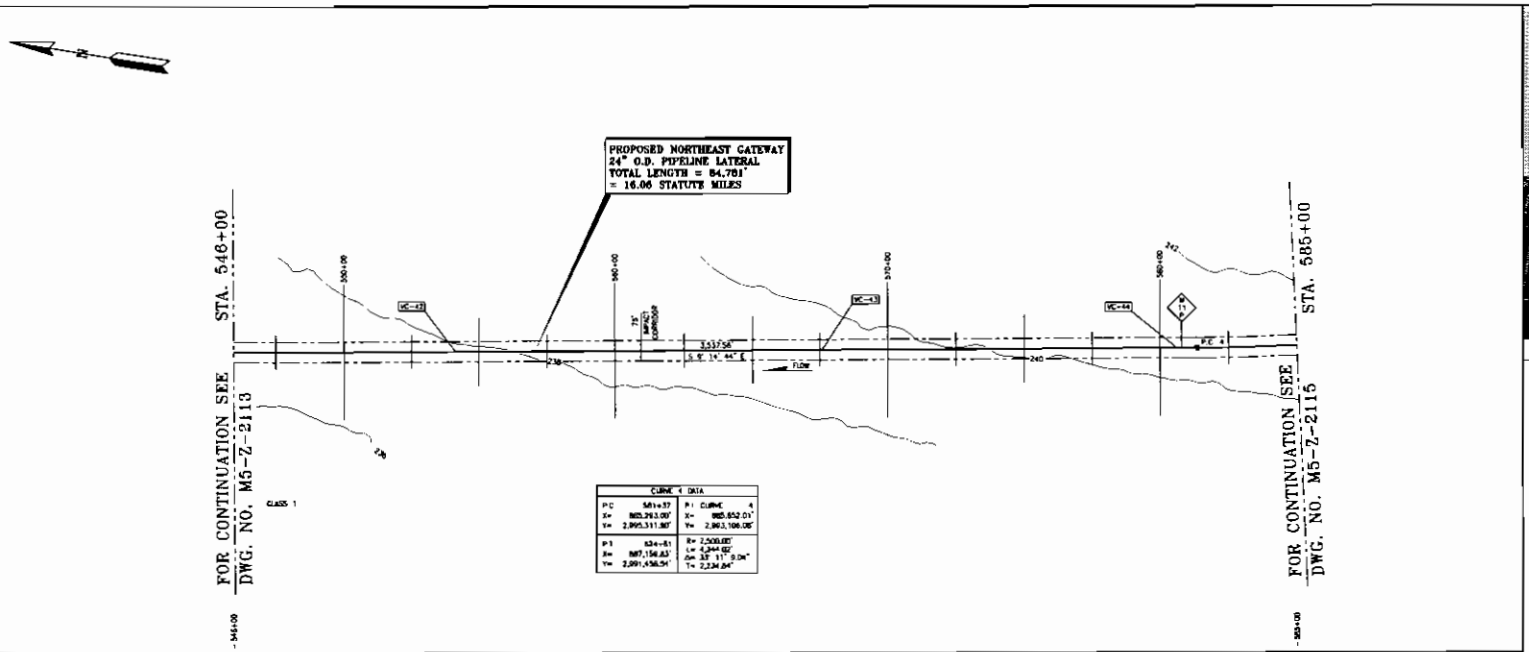
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

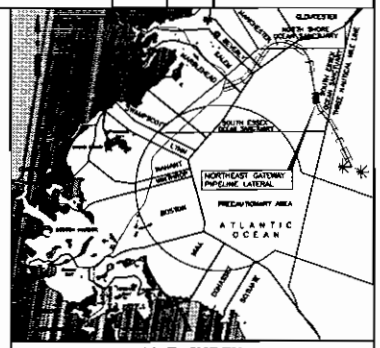
NO	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C	J.A.R	R.P.G

REVISIONS

05-02-06 9:15 04125\ACDE 1.CLIP

	THIS DWG.	TOTAL
STATE	3,900.00'	32,643.33' = 6.18 STATUTE MILES





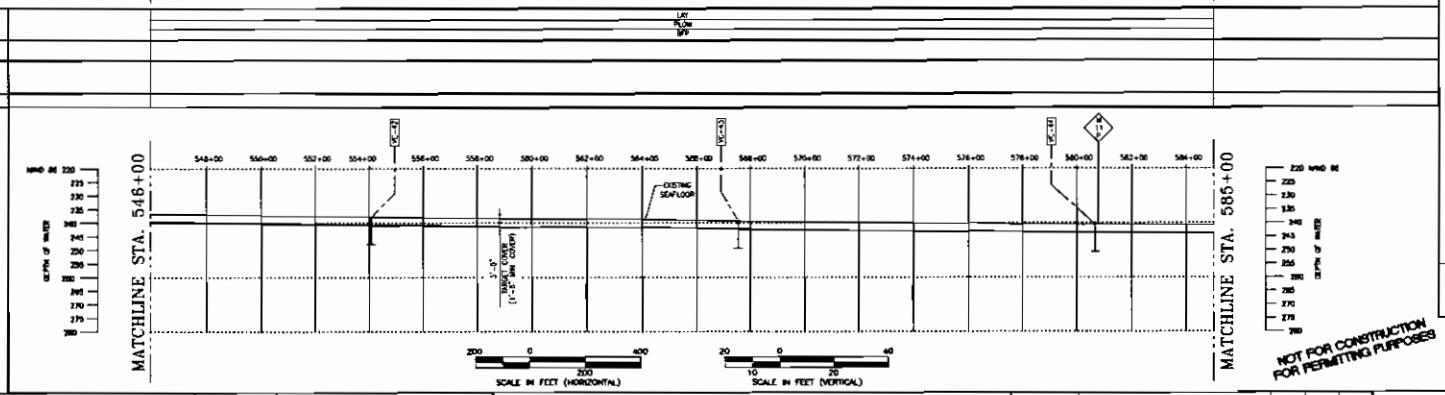
MAP INDEX

- VC-02 – VIBRATORY CORE LOCATION
- 12.0 – MILE POST REFERENCE (STATUTE MILES)
- 134 – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88
- 0+00 – STATIONING ALONG CENTERLINE
- PROPOSED ROUTE CENTERLINE
- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND. MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CONSTRUCTION, TRENCHING, AND COVER METHODS



NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2945 (-0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP – BACKFILL PLOW
   CC MATS – CONCRETE MATS
   M – IMPORTED MATERIAL (SAND GRAVEL TRIMMED SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3500 WEST BEAUREGARD AVE., S., SUITE 500
METAIRIE, LA 70002-7400
(504) 833-0301 FAX (504) 833-4940
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R.	SHEET:	15 OF 22

DWG. NO. M5-Z-2114 REV. A

		GEOTECHNICAL LABORATORY TEST REPORT DATED
		5-5-05 FOR VIBRATORY CORE DATA
04ESD84	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED	GEOPHYSICAL REPORT DATED 5-6-05 FOR
	MAY 2005, OCEAN SURVEYS, INC.	SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

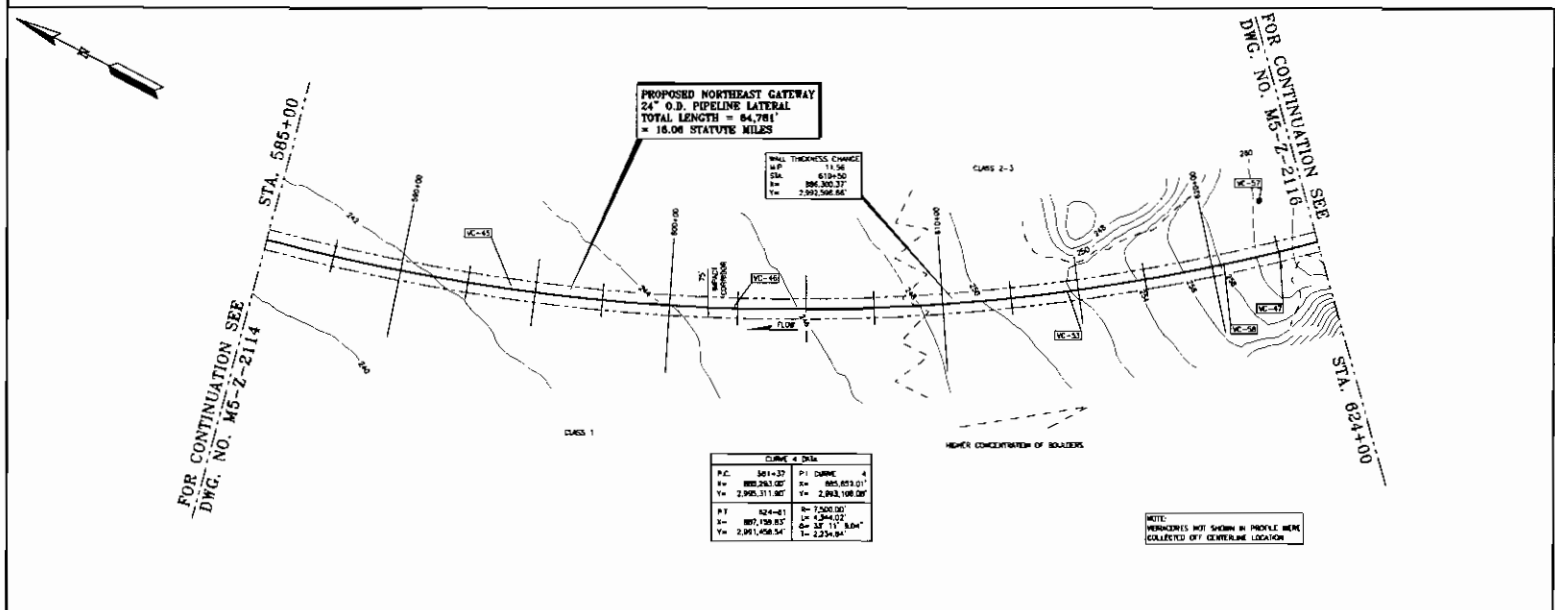
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

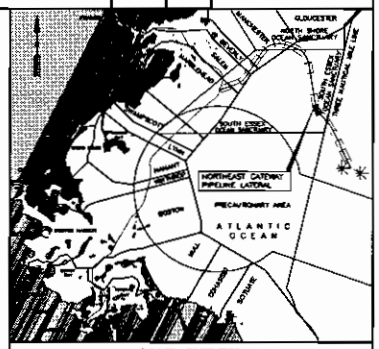
NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D.
A	5-2-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

REVISIONS

05-02-06 9:12 DATE/VAUGE 1 C.J.C.

	THIS DWG.	TOTAL
STATE	3,900.00'	32,643.33' - 6.18 STATUTE MILES





MAP INDEX

- VC-52 - VIBRATORY CORE LOCATION
- 0.0 - MILE POST REFERENCE (STATUTE MILES)
- 1.34 - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88
- 0+00 - STATIONING ALONG CENTERLINE
- PROPOSED ROUTE CENTERLINE
- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

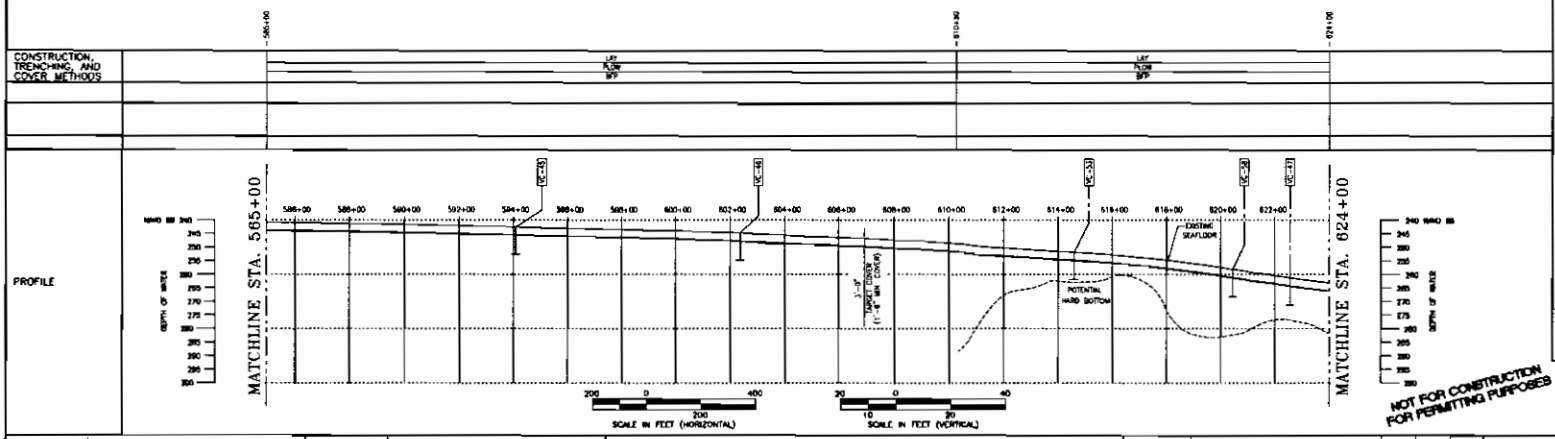
CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FINETONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001 NORTH AMERICAN DATUM 1983, U.S FEET. VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2345 (+0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP - BACKFILL PLOW
   CC MAT - CONCRETE MATS
   IM - IMPORTED MATERIAL (SAND BAGS, TRENCH SAND)

LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS



			GEOTECHNICAL LABORATORY TEST REPORT DATED
			5-5-05 FOR VIBRATORY CORE DATA.
04E5084	PIPELINE LATERAL ALIGNMENT, SHEET 1-15, DATED		GEOPHYSICAL REPORT DATED 8-8-05 FOR
	MAY 2005, OCEAN SURVEYS, INC.		SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPROVED
A	5-2-06	ISSUED FOR PERMITTING	C.J.C	J.A.R	R.P.G.

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3340 WEST BOYLAND AVE., S., SUITE 500
METAIRIE, LA 70002-7406
(504) 832-6321 Fax (504) 833-4048
www.projectconsultinc.com

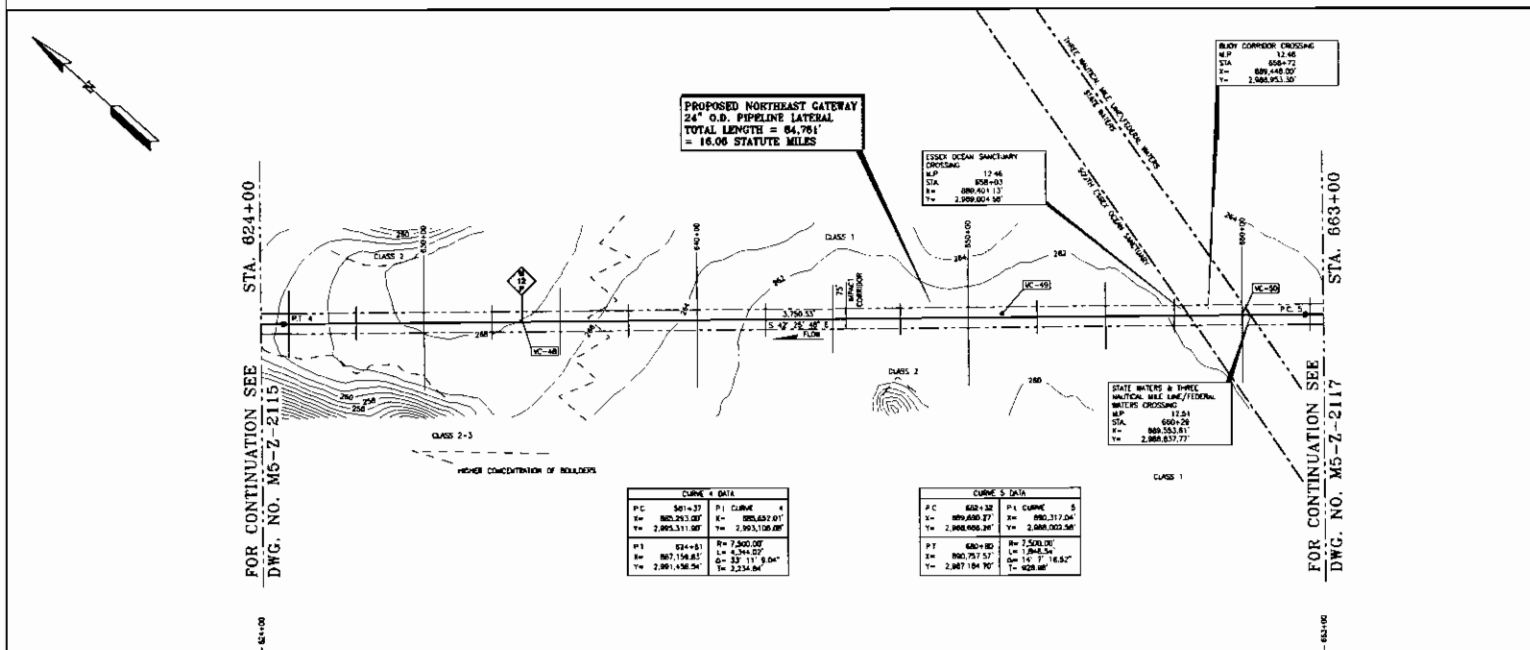
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

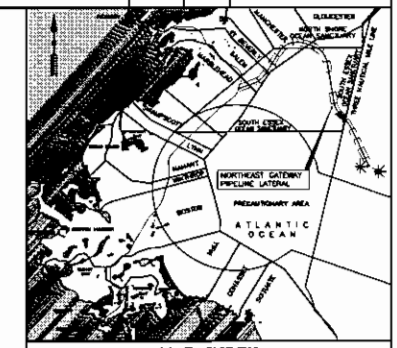
DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R	SHEET	16 OF 22

DWG. NO. M5-Z-2115 REV A

05-02-06 9:02 04E5084CE 1.F.J.C

	THIS DWG.	TOTAL
STATE	3,629.52'	32,643.33' = 6.18 STATUTE MILES
FEDERAL	270.48'	18,751.70' = 3.55 STATUTE MILES





MAP INDEX

VC-52 - VIBRATORY CORE LOCATION

0.0 - MILE POST REFERENCE (STATUTE MILES)

13A - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CLASS 2 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM MEDIUM SAND TO GRAVEL; MAY INCLUDE FRACTIONS OF FINER AND COARSER SEDIMENTS AS WELL AS INDIVIDUAL BOULDERS.

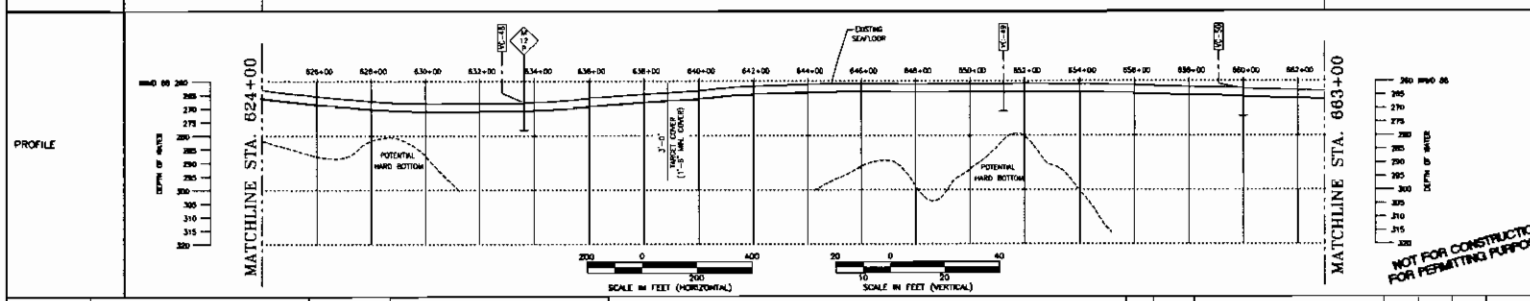
CLASS 3 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM GRAVEL TO BOULDERS; MAY INCLUDE FRACTIONS OF FINER SEDIMENTS WITH BEDROCK IN THE SHALLOW SUBSURFACE.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET. VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED
3. REFERENCE http://www.mass.gov/mgis.htm FOR MUNICIPALITY BOUNDARIES (OFFSHORE), WORKSHOP BOUNDARIES AND OCEAN SANCTUARIES.
4. REFERENCE http://www.nationalatlas.gov/atlas/mtnbound.html FOR STATE/FEDERAL BOUNDARY (3 MILE LINE)
5. TEST PRESSURE WILL BE 2345 (-0, +25) PSIG.
6. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS: BFP = BACKFILL PLOW
   CC MATS = CONCRETE MATS
   M = IMPORTED MATERIAL (SAND BAGS TREATED SAND)

LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

			GEOTECHNICAL LABORATORY TEST REPORT DATED
			5-5-05 FOR VIBRATORY CORE DATA
04E5084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED		GEOPHYSICAL REPORT DATED 8-8-05 FOR
	MAY 2005, OCEAN SURVEYS, INC.		SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 WEST ESPLANADE AVE., S., SUITE 600
METAIRIE, LA 70002-7606
(504) 833-6321 Fax (504) 833-4940
www.projectconsultingsvcs.com

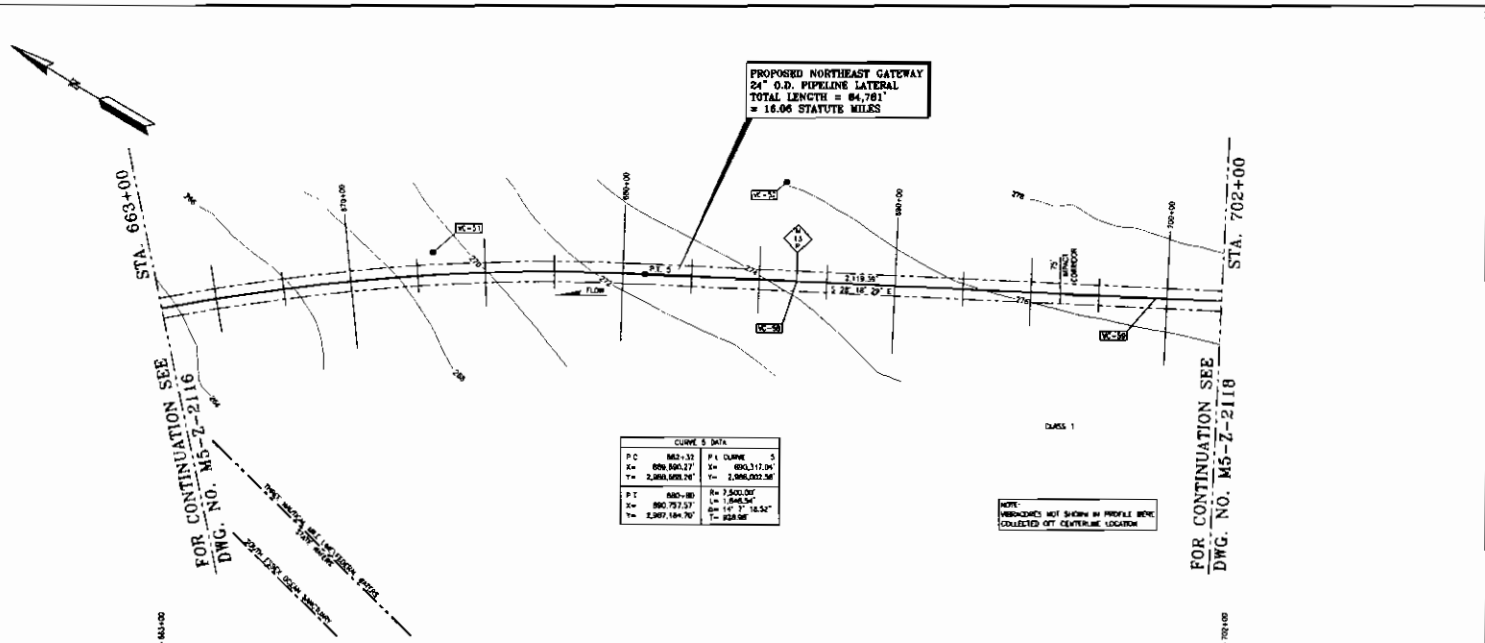
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

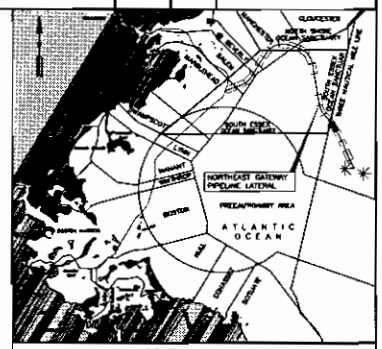
DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY	J.A.R.	SHEET	17 OF 22

DWG. NO. M5-Z-2116 REV. A

05-02-06 5:34 04T3S1.MODE 1 C.J.C.

	THIS DWG.	TOTAL
FEDERAL	3,900.00'	20,644.78' = 3.91 STATUTE MILES





MAP INDEX

VC-32 – VIBRATORY CORE LOCATION

O.D. – MILE POST REFERENCE (STATUTE MILES)

134 – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 – STATIONING ALONG CENTERLINE

– PROPOSED ROUTE CENTERLINE

– SEDIMENT TYPE INTERFACE

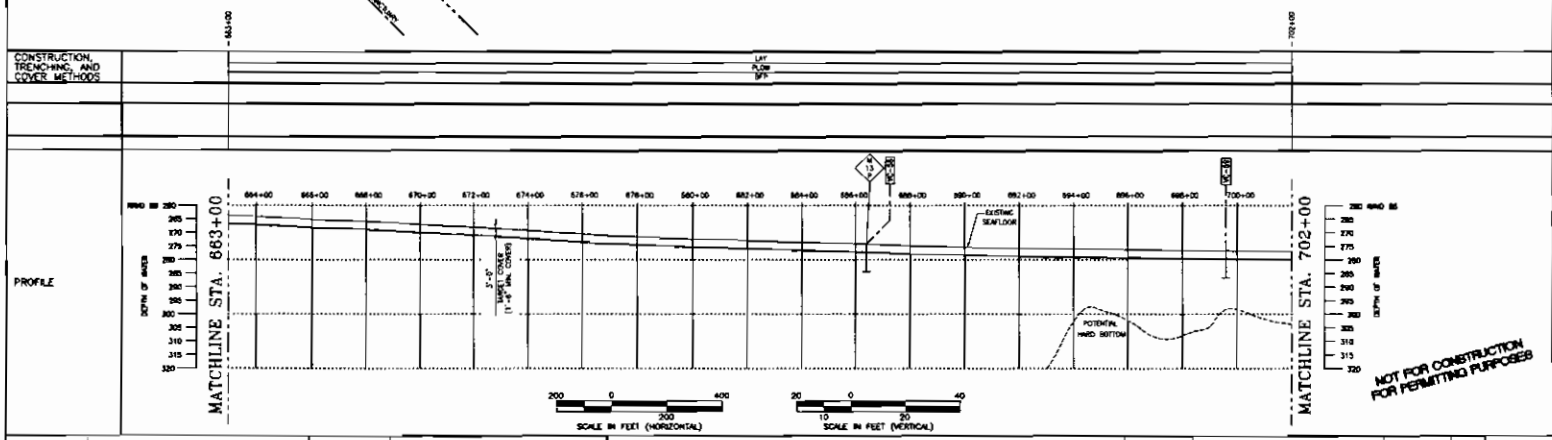
SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND. MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. REFERENCE: http://www.mass.gov/mgis/shp FOR MUNICIPALITY BOUNDARIES (DPTS/MORC), TOWNSHIP BOUNDARIES AND OCEAN SANCTUARIES.
4. REFERENCE: http://nauticalcharts.noaa.gov/csdl/mbnavd.htm FOR STATE/FEDERAL BOUNDARY (3 MILE LINE).
5. TEST PRESSURE WILL BE 2345 (-0, +25) PSIG.
6. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS:
   BFP – BACKFILL PLOW
   CC MATS – CONCRETE MATS
   IM – IMPORTED MATERIAL (SAND BAGS, TRENCHED SAND)

LEGEND & NOTES



			GEOTECHNICAL LABORATORY TEST REPORT DATED
			5-5-05 FOR VIBRATORY CORE DATA
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED		GEOPHYSICAL REPORT DATED 8-8-05 FOR
	MAY 2005, OCEAN SURVEYS, INC.		SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C	J.A.R	R.P.G

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3306 PERIT ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7406
(504) 833-5551 Fax: (504) 833-4040
www.projectconsulting.com

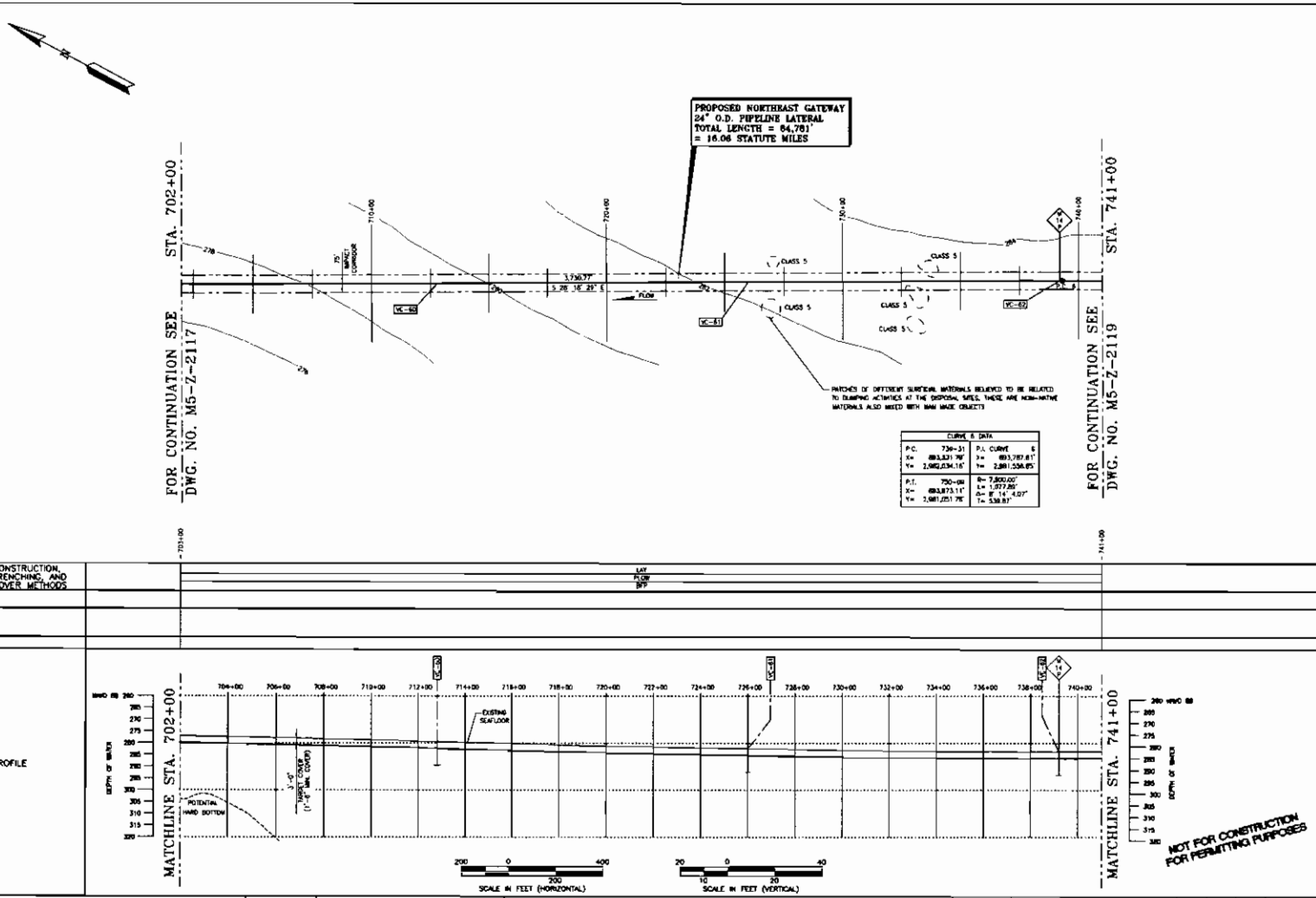
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

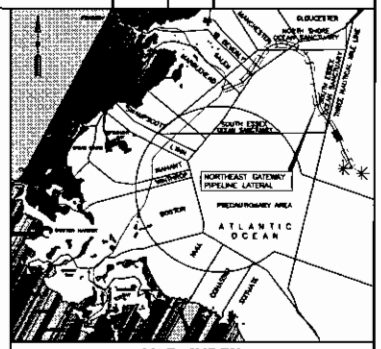
DRAWN BY:	C.J.C	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R	SHEET:	18 OF 22

DWG. NO. M5-Z-2117 REV A

05-02-06 8:33 04125VAGE 1 F.J.C.

	THIS DWG	TOTAL
FEDERAL	3,900.00'	18,751.70' = 3.55 STATUTE MILES





MAP INDEX

- VC-02 — VIBRATORY CORE LOCATION
- 0.0 — MILE POST REFERENCE (STATUTE MILES)
- 13M — HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88
- 08 — STATIONING ALONG CENTERLINE
- PROPOSED ROUTE CENTERLINE
- SEDIMENT TYPE WATERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CLASS 2 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM MEDIUM SAND TO GRAVEL; MAY INCLUDE FRACTIONS OF FINER AND COARSER SEDIMENTS AS WELL AS MONOLITHIC BOULDERS.

CLASS 3 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM GRAVEL TO BOULDERS; MAY INCLUDE FRACTIONS OF FINER SEDIMENTS WITH BEDROCK IN THE SHALLOW SUBSURFACE.

CLASS 4 BEDROCK OUTCROPS ON THE SEAFLOOR; ROCK SURFACE MAY CONTAIN DEPRESSIONS FILLED WITH FINE, MEDIUM, AND/OR COARSE SEDIMENTS.

CLASS 5 COMBINATION OF CLASSES 1, 2, 3 SEDIMENTS WITH UNKNOWN NON-NATIVE MATERIAL. THESE AREAS MAY BE ASSOCIATED WITH ACTIVITIES AT THE MASSACHUSETTS BAY DISPOSAL SITES.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED
3. TEST PRESSURE WILL BE 2545 (-0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP – BACKFILL PLOW
   CC MATS – CONCRETE MATS
   M – IMPORTED MATERIAL (SAND BAGS, TRENCH SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3000 WEST BOULEVARD AVE., S. SUITE 800
METAIRIE, LA 70002-7408
(504) 833-6381 FAX (504) 833-4040
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	D.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-2-06	PROJ. MGR.:	
CHECKED BY:	J.A.R.	SHEET:	19 OF 22

DWG. NO. M5-Z-2118 REV. A

DWG5084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED MAY 2005, OCEAN SURVEYS, INC.		GEOTECHNICAL LABORATORY TEST REPORT DATED 5-5-05 FOR VIBRATORY CORE DATA. GEOPHYSICAL REPORT DATED 6-6-05 FOR SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

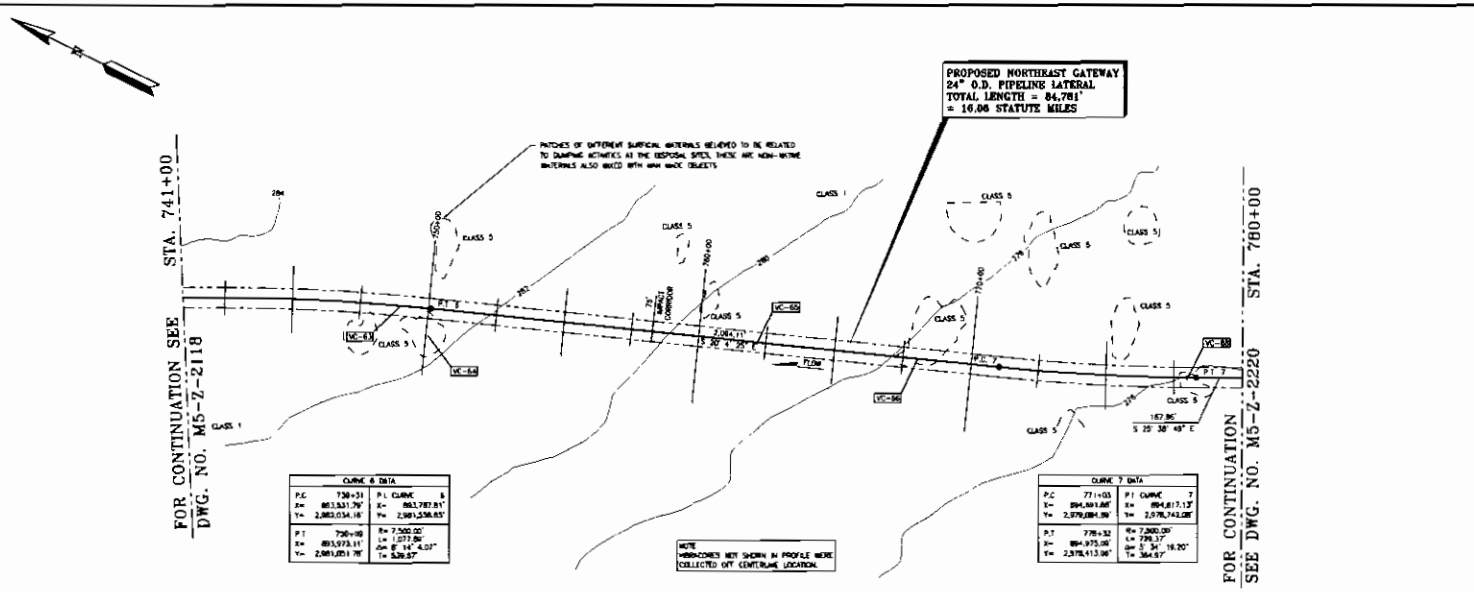
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D
A	5-2-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

REVISIONS

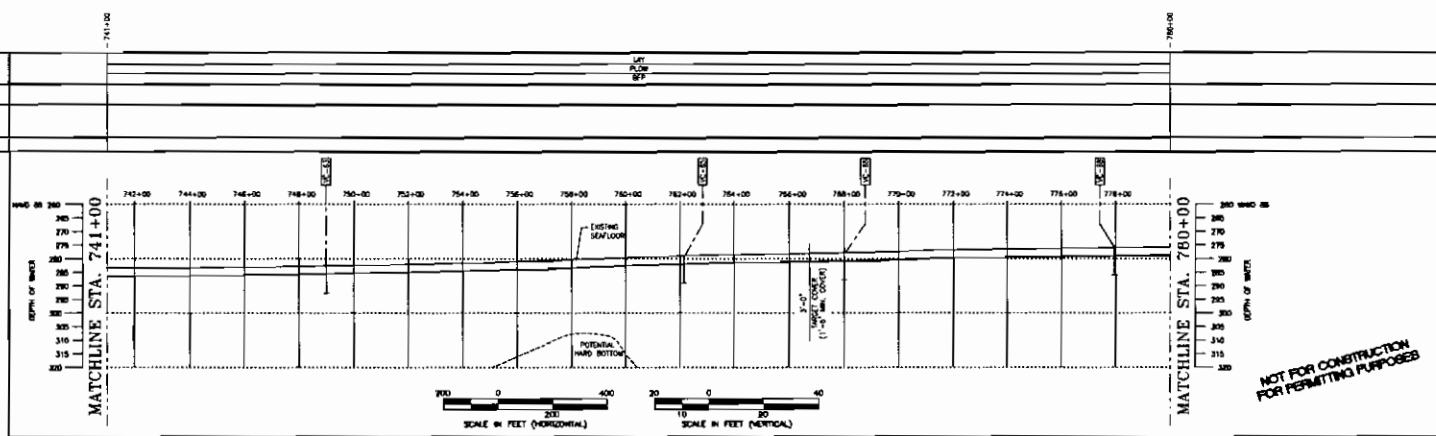
05-02-06 8:21 M:\DWG\M5-Z-2118.DWG

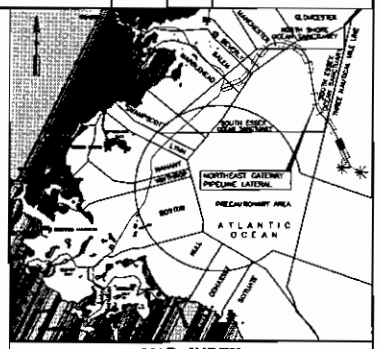
	THIS DWG.	TOTAL
FEDERAL	3,000.00'	18,751.70' = 3.55 STATUTE MILES



CURVE 6 DATA	
P.C. 730+31	P.I. CURVE 6
X= 883,531.79'	X= 883,787.81'
Y= 2,983,034.16'	Y= 2,981,536.85'
P.T. 736+08	R= 7,500.00'
X= 883,973.11'	L= 1,077.86'
Y= 2,981,051.78'	Δ= 8° 14' 4.07"
	T= 539.57'

CURVE 7 DATA	
P.C. 771+03	P.I. CURVE 7
X= 884,161.86'	X= 884,817.13'
Y= 2,979,084.59'	Y= 2,978,742.08'
P.T. 778+32	R= 7,500.00'
X= 884,973.06'	L= 729.37'
Y= 2,978,413.96'	Δ= 5° 34' 16.90"
	T= 364.87'





MAP INDEX

- VC-03 – VIBRATORY CORE LOCATION
- 0.0 – MILE POST REFERENCE (STATUTE MILES)
- 134 – HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88
- 0+00 – STATIONING ALONG CENTERLINE
- PROPOSED ROUTE CENTERLINE
- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND; MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CLASS 2 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM MEDIUM SAND TO GRAVEL; MAY INCLUDE FRACTIONS OF FINER AND COARSER SEDIMENTS AS WELL AS INDIVIDUAL BOULDERS.

CLASS 3 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM GRAVEL TO BOULDERS; MAY INCLUDE FRACTIONS OF FINER SEDIMENTS WITH BEDROCK IN THE SHALLOW SUBSURFACE.

CLASS 5 COMBINATION OF CLASSES 1, 2, 3 SEDIMENTS WITH UNKNOWN NON-NATIVE MATERIAL. THESE AREAS MAY BE ASSOCIATED WITH ACTIVITIES AT THE MASSACHUSETTS DRY DISPOSAL SITES.

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET. VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2345 (-0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS:
   BFP – BACKFILL PLOW
   CC MATS – CONCRETE MATS
   M – IMPORTED MATERIAL (SAND BAGS, TREATED SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3900 WEST BIRNAMWOOD AVE., S., SUITE 500
BIRMINGHAM, AL 35243-7404
(205) 822-5321 Fax (205) 822-4040
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-1-06	PROJ. MGR.:	
CHECKED BY:	J.A.R.	SHEET:	20 OF 22

DWG. NO. M5-Z-2119 REV. A

DHES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-18, DATED MAY 2005, OCEAN SURVEYS, INC.	GEOTECHNICAL LABORATORY TEST REPORT DATED 5-5-05 FOR VIBRATORY CORE DATA. GEOPHYSICAL REPORT DATED 8-8-05 FOR SIDE SCAN AND MAGNETIC ANOMALY INFORMATION	

REFERENCE DRAWINGS

Duke Energy Gas Transmission

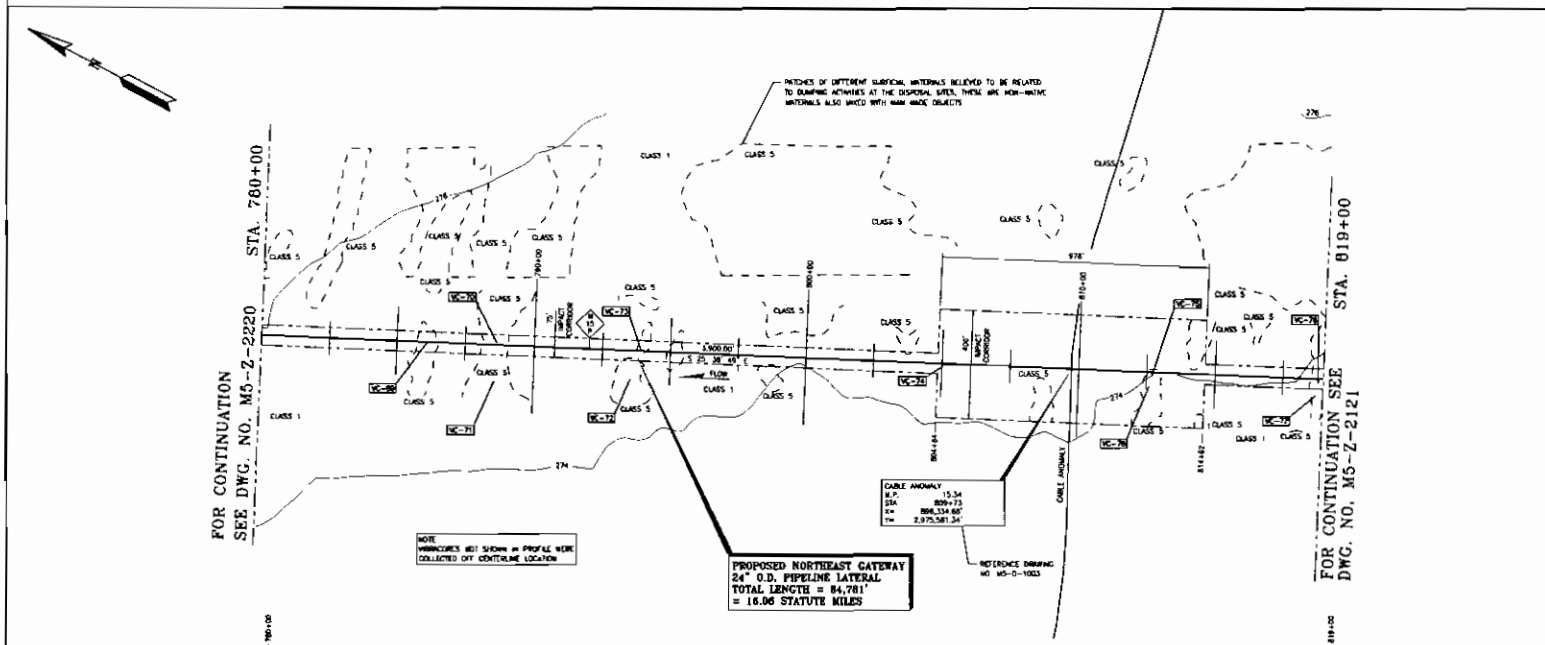
Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

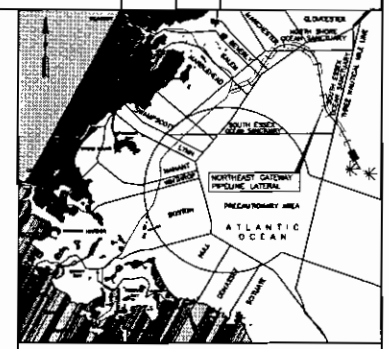
NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D
A	5-1-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

REVISIONS

05-01-06 16:33 04125\NEGX_1.1.dwg

	THIS DWG.	TOTAL
FEDERAL	3,900.00'	18,751.70' = 3.55 STATUTE MILES





MAP INDEX

VC-02 - VIBRATORY CORE LOCATION

0.0 P - MILE POST REFERENCE (STATUTE MILES)

134 - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND. MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CLASS 2 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM MEDIUM SAND TO GRAVEL. MAY INCLUDE FRACTIONS OF FINER AND COARSER SEDIMENTS AS WELL AS INDIVIDUAL BOULDERS.

CLASS 3 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM GRAVEL TO BOULDERS. MAY INCLUDE FRACTIONS OF FINER SEDIMENTS WITH OUTCROP IN THE SHALLOW SUBSURFACE.

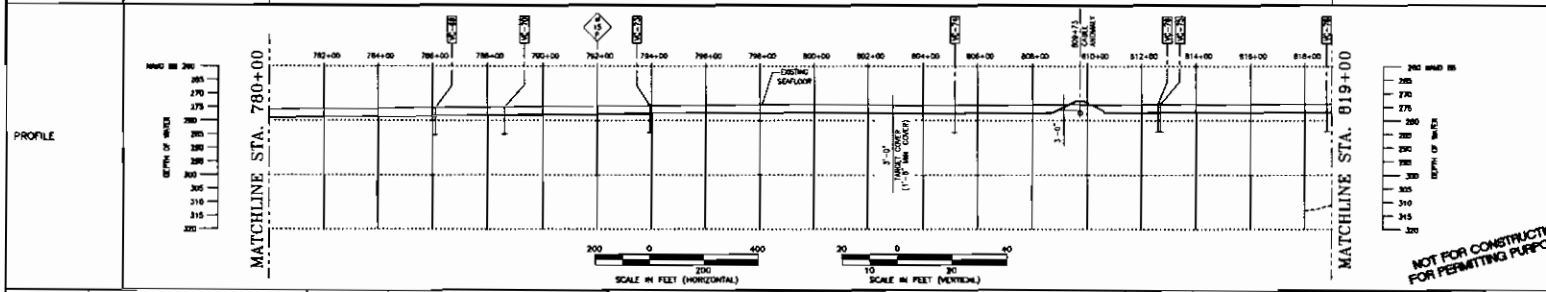
CLASS 5 COMBINATION OF CLASSES 1, 2, 3 SEDIMENTS WITH UNKNOWN NON-NATIVE MATERIAL. THESE AREAS MAY BE ASSOCIATED WITH ACTIVITIES AT THE MASSACHUSETTS BAY DISPOSAL SITES

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983. U.S. FEET. VERTICAL DATUM NAVD 88.
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2545 (-0, +25) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS:
   BFP - BACKFILL PLOW
   CC MATS - CONCRETE MATS
   IM - IMPORTED MATERIAL (SAND BACK, TRENCHED SAND)
5. CONTRACTOR TO PROVIDE CABLE CROSSING PLAN WHICH MINIMIZES TRANSITIONS. PLAN SHALL BE SUBMITTED FOR APPROVAL.
6. AT THE CABLE ANOMALY CROSSING, TWO MADE JOINTS WILL BE PLACED BACK-TO-BACK AT 4,220 FT DISTANCE FROM THE CROSSING POINT ON EITHER SIDE OF THE CABLE ANOMALY. REFER DRAWING M5-D-1003 FOR MORE DETAIL.

LEGEND & NOTES

CONSTRUCTION, TRENCHING, AND COVER METHODS	BFP FLOW BFP	CABLE ANOMALY CROSSING (SEE NOTE 5)	



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-18, DATED MAY 2005, OCEAN SURVEYS, INC.		GEOTECHNICAL LABORATORY TEST REPORT DATED 5-5-05 FOR VIBRATORY CORE DATA. GEOPHYSICAL REPORT DATED 6-6-05 FOR SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO.	DATE	DESCRIPTION	DRAWN	CHK'D.	APPRV'D
A	5-1-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

REVISIONS

PROJECT CONSULTING SERVICES, INC.
3300 WEST SPRAMADE AVE. S., SUITE 500
NEVADA, LA 70000-7406
(504) 888-5321 Fax (504) 888-4040
www.projectconsulting.com

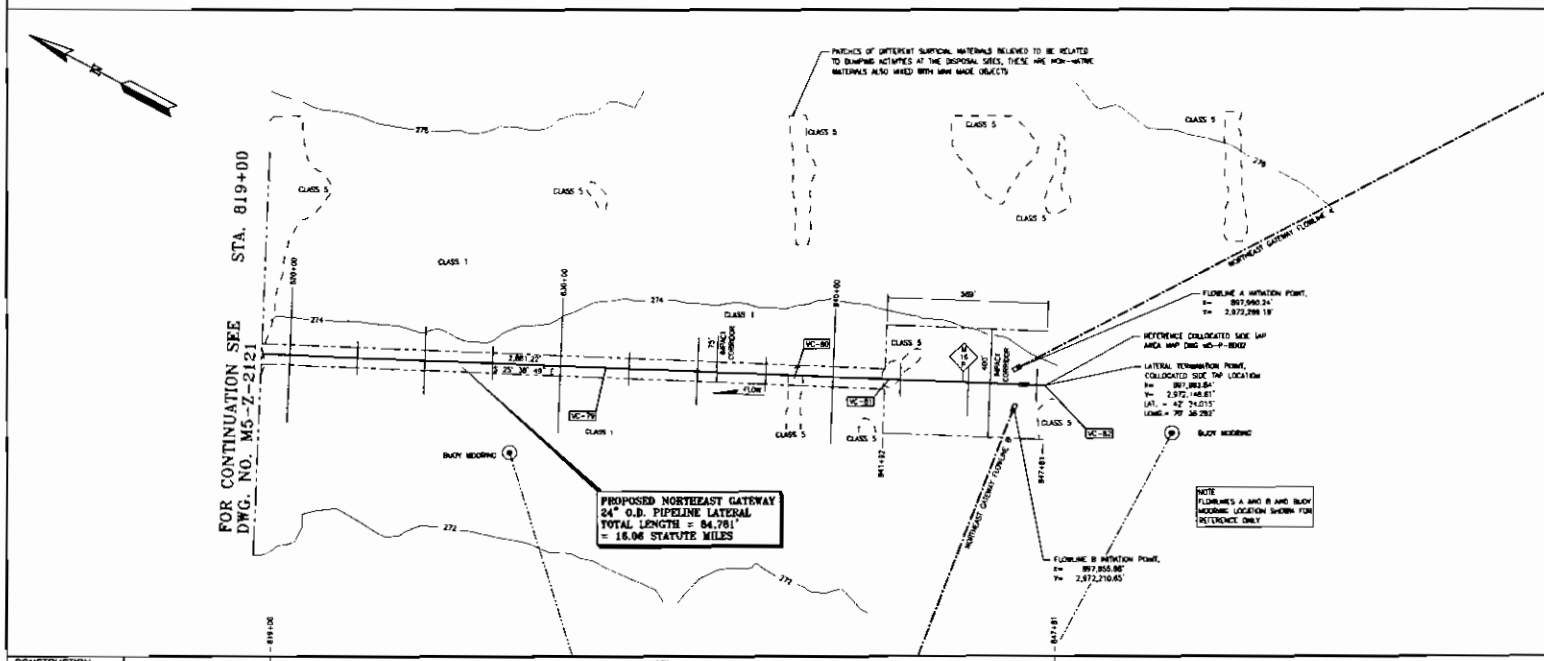
NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

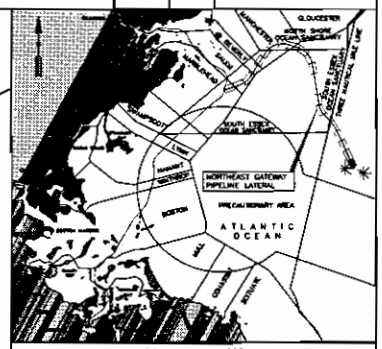
DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-1-06	PROJ. MGR.:	
CHECKED BY:	J.A.R.	SHEET:	21 OF 22

DWG. NO. M5-Z-2120 REV. A

05-01-06 15:50 04121/MGN 1 C.J.C.

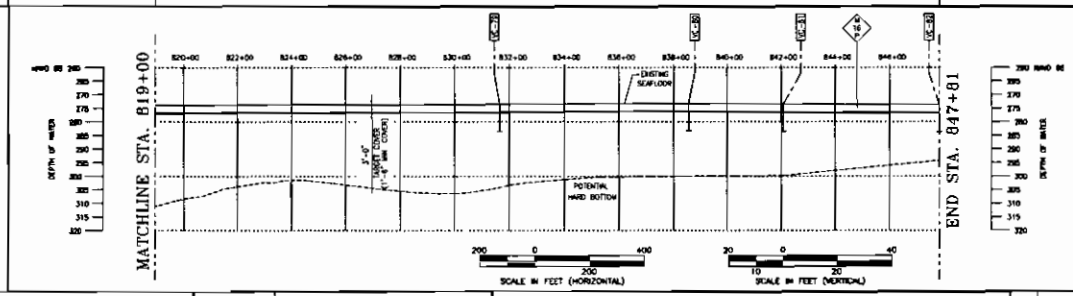
	THIS DWG	TOTAL
FEDERAL	3,881.22'	18,751.70' = 3.55 STATUTE MILES





MAP INDEX

CONSTRUCTION, TRENCHING, AND COVER METHODS	MAY		
	FLOW		
	BFP		



NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES

VC-72 - VIBRATORY CORE LOCATION

MILE POST REFERENCE (STATUTE MILES)

134 - HYDROGRAPHIC CONTOURS ARE SHOWN AT 2 FT INTERVALS AND ARE REFERENCED TO NAVD 88

0+00 - STATIONING ALONG CENTERLINE

- PROPOSED ROUTE CENTERLINE

- SEDIMENT TYPE INTERFACE

SURFICIAL SEDIMENT TYPE

CLASS 1 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM CLAY TO MEDIUM SAND. MAY INCLUDE FRACTIONS OF COARSER SEDIMENTS AND ISOLATED BOULDERS.

CLASS 2 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM MEDIUM SAND TO GRAVEL; MAY INCLUDE FRACTIONS OF FINER AND COARSER SEDIMENTS AS WELL AS INDIVIDUAL BOULDERS

CLASS 3 SEDIMENTS WITH A DOMINANT SIZE RANGING FROM GRAVEL TO BOULDERS. MAY INCLUDE FRACTIONS OF FINER SEDIMENTS WITH BEDROCK IN THE SHALLOW SUBSURFACE.

CLASS 5 COMBINATION OF CLASSES 1, 2, 3 SEDIMENTS WITH UNKNOWN NON-NATIVE MATERIAL. THESE AREAS MAY BE ASSOCIATED WITH ACTIVITIES AT THE MASSACHUSETTS BAY DISPOSAL SITES

NOTES:

1. GEODETIC INFORMATION BASED UPON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, ZONE 2001, NORTH AMERICAN DATUM 1983, U.S. FEET. VERTICAL DATUM NAVD 88
2. SEDIMENT TYPE ALONG PIPELINE ROUTE IS CLASS 1 UNLESS NOTED.
3. TEST PRESSURE WILL BE 2340 (-0, +2%) PSIG.
4. ABBREVIATIONS FOR CONSTRUCTION, TRENCHING AND COVER METHODS
   BFP - BACKFILL PLOW
   CC MATS - CONCRETE MATS
   IM - IMPORTED MATERIAL (SAND BAGS, TREATED SAND)

LEGEND & NOTES

PROJECT CONSULTING SERVICES, INC.
3000 WEST ESPLANADE AVE., S., SUITE 500
METAIRIE, LA 70002-7408
(504) 833-8381 Fax (504) 833-4640
www.projectconsulting.com

NORTHEAST GATEWAY PIPELINE LATERAL
24" O.D. PIPELINE LATERAL
ALIGNMENT AND PROFILE

DRAWN BY:	C.J.C.	APPROVED BY:	L.P.
SCALE:	AS NOTED	PROJ. ENGR.:	R.P.G.
DATE:	5-1-06	PROJ. MGR.:	
CHECKED BY	J.A.R.	SHEET	22 OF 22

DWG. NO. M5-Z-2121 REV. A

		GEOTECHNICAL LABORATORY TEST REPORT DATED
		5-5-05 FOR VIBRATORY CORE DATA
04ES084	PIPELINE LATERAL ALIGNMENT, SHEET 1-16, DATED	GEOPHYSICAL REPORT DATED 5-6-05 FOR
	MAY 2005, OCEAN SURVEYS, INC	SIDE SCAN AND MAGNETIC ANOMALY INFORMATION

REFERENCE DRAWINGS

Duke Energy Gas Transmission

Algonquin Gas Transmission Company
890 Winter Street, Suite 300, Waltham, MA 02451 (617) 254-4050

NO	DATE	DESCRIPTION	DRAWN	CHK'D	APPRV'D
A	5-1-06	ISSUED FOR PERMITTING	C.J.C.	J.A.R.	R.P.G.

REVISIONS

05-01-06 15:11 04125A.DGN J.C.J.C.

Northeast Gateway Pipeline Lateral Comprehensive
Construction Method, Sediment Type and Impacts Table 2.3-1

Station		Milepost			Ocean		Bottom	Pipe Lay	Trenching		Construction	Soil	Impact Areas (acres)						
											Sequence	Identifier			Anchoring				
From	To	From	To	Municipality	Sanctuary	EFH	Type	Method	Method	Length			Trench	Side Cast	Anchors	Cable Sweep	Armoring	TOTAL	
0+00	1+00	0.00	0.02	Marblehead	South Essex	SW Quad	Class 1	HTap	Jetting	100.0	D	F	0.07	0.92	0.01	1.00	-	2.00	
1+00	2+64	0.02	0.05	Marblehead	South Essex	SW Quad	Class 1	OLB	Jetting	164.0	D	F	0.11	1.51	0.02	1.64	-	3.27	
2+64	5+89	0.05	0.11	Marblehead	South Essex	SW Quad	Class 1	OLB	Plow/Jet	325.0	C	F	0.22	2.98	0.06	4.86	-	8.13	
5+89	13+00	0.11	0.25	Marblehead	South Essex	SW Quad	Class 1	OLB	Plow	711.0	A	F	0.33	0.90	0.11	6.70	-	8.03	
13+00	38+83	0.25	0.74	Marblehead	South Essex	SW Quad	Class 1	OLB	Plow	2,583.3	A	F	1.19	3.26	0.39	24.34	-	29.18	
38+83	100+14	0.74	1.90	Salem	South Essex	SW Quad	Class 1	OLB	Plow	6,130.4	A	F	2.81	7.74	0.94	57.75	-	69.24	
100+14	103+45	1.90	1.96	Salem	South Essex	SW Quad	Class 1-2	OLB	Plow	330.9	A	F	0.15	0.42	0.05	3.12	-	3.74	
103+45	125+02	1.96	2.37	Salem	South Essex	SW Quad	Class 1	OLB	Plow	2,156.0	A	F	0.99	2.72	0.33	20.33	-	24.37	
125+02	140+96	2.37	2.67	Beverly	South Essex	SW Quad	Class 1	OLB	Plow	1,593.5	A	F	0.73	2.01	0.24	15.01	-	18.00	
140+96	142+02	2.67	2.69	Beverly	South Essex	NW Quad	Class1	OLB	Plow	106.0	A	F	0.05	0.13	0.02	1.00	-	1.20	
142+02	145+04	2.69	2.75	Beverly	South Essex	NW Quad	Class 1-2	OLB	Plow	301.9	A	F	0.14	0.38	0.05	2.84	-	3.41	
145+04	162+67	2.75	3.08	Beverly	South Essex	NW Quad	Class 1	OLB	Plow	1,763.0	A	F	0.81	2.23	0.27	16.61	-	19.91	
162+67	223+60	3.08	4.23	Manchester	South Essex	NW Quad	Class 1	OLB	Plow	6,093.1	A	F	2.80	7.69	0.93	57.40	-	68.82	
223+60	293+00	4.23	5.55	Manchester	North Shore	NW Quad	Class 1	OLB	Plow	6,940.0	A	F	3.19	8.76	1.06	65.38	-	78.39	
293+00	296+25	5.55	5.61	Manchester	North Shore	NW Quad	Class 1	OLB	Plow/Jet	325.0	C	F	0.22	2.98	0.06	4.86	-	8.13	
296+25	298+84	5.61	5.66	Manchester	North Shore	NW Quad	Class 1	OLB	Jetting	259.0	C	F	0.18	2.38	0.05	3.87	-	6.48	
298+84	300+34	5.66	5.69	Manchester	North Shore	NW Quad	Class 1	OLB	CC-Mats	150.0	B	F	-	-	0.01	0.75	0.03	0.79	
300+34	300+34	5.69	5.69	Manchester	North Shore	NW Quad	Class 1	OLB	Hibernia Cable	0.0	B	F	-	-	-	-	-	-	
300+34	301+84	5.69	5.72	Manchester	North Shore	NW Quad	Class 1	OLB	CC-Mats	150.0	B	F	-	-	0.01	0.75	0.03	0.79	
301+84	304+71	5.72	5.77	Manchester	North Shore	NW Quad	Class 1	OLB	Jetting	287.0	C	F	0.20	2.64	0.05	4.29	-	7.18	
304+71	307+96	5.77	5.83	Manchester	North Shore	NW Quad	Class 1	OLB	Plow/Jet	325.0	C	F	0.22	2.98	0.06	4.86	-	8.13	
307+96	333+86	5.83	6.32	Manchester	North Shore	NW Quad	Class 1	OLB	Plow	2,590.2	A	F	1.19	3.27	0.40	24.40	-	29.26	
333+86	369+00	6.32	6.99	State Waters	North Shore	NW Quad	Class 1	OLB	Plow	3,514.0	A	F	1.61	4.44	0.54	33.10	-	39.69	
369+00	384+79	6.99	7.29	State Waters	South Essex	NW Quad	Class 1	OLB	Plow	1,578.8	A	F	0.72	1.99	0.24	14.87	-	17.83	
384+79	449+22	7.29	8.51	State Waters	South Essex	NE Quad	Class 1	OLB	Plow	6,443.2	A	F	2.96	8.14	0.98	60.70	-	72.77	
449+22	609+06	8.51	11.54	State Waters	South Essex	SE Quad	Class 1	OLB	Plow	15,983.9	A	F	7.34	20.18	2.44	150.58	-	180.54	
609+06	636+13	11.54	12.05	State Waters	South Essex	SE Quad	Class 1-HC	OLB	Plow	2,707.3	A	F	1.24	3.42	0.41	25.50	-	30.58	
636+13	658+04	12.05	12.46	State Waters	South Essex	SE Quad	Class 1	OLB	Plow	2,190.2	A	F	1.01	2.77	0.33	20.63	-	24.74	
658+04	660+30	12.46	12.51	State Waters	N/A	SE Quad	Class 1	OLB	Plow	226.0	A	F	0.10	0.29	0.03	2.13	-	2.55	146732.3
660+30	739+31	12.51	14.00	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	7,901.2	A	F	3.63	9.98	1.21	74.43	-	89.24	
739+31	767+29	14.00	14.53	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	2,798.2	A	F	1.28	3.53	0.43	26.36	-	31.61	
767+29	768+73	14.53	14.56	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	144.0	A	F	0.07	0.18	0.02	1.36	-	1.63	
768+73	777+69	14.56	14.73	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	896.0	A	F	0.41	1.13	0.14	8.44	-	10.12	
777+69	778+28	14.73	14.74	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	59.0	A	F	0.03	0.07	0.01	0.56	-	0.67	
778+28	785+70	14.74	14.88	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	742.0	A	F	0.34	0.94	0.11	6.99	-	8.38	
785+70	787+25	14.88	14.91	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	154.7	A	F	0.07	0.20	0.02	1.46	-	1.75	
787+25	788+11	14.91	14.93	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	85.9	A	F	0.04	0.11	0.01	0.81	-	0.97	
788+11	789+09	14.93	14.94	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	98.2	A	F	0.05	0.12	0.01	0.92	-	1.11	
789+09	793+83	14.94	15.03	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	473.9	A	F	0.22	0.60	0.07	4.46	-	5.35	
793+83	794+15	15.03	15.04	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	32.4	A	F	0.01	0.04	0.00	0.30	-	0.37	
794+15	794+82	15.04	15.05	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	67.5	A	F	0.03	0.09	0.01	0.64	-	0.76	
794+82	795+46	15.05	15.07	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	63.6	A	F	0.03	0.08	0.01	0.60	-	0.72	
795+46	804+84	15.07	15.24	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	938.3	A	F	0.43	1.18	0.14	8.84	-	10.60	
804+84	808+09	15.24	15.30	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow/Jet	325.0	C	F	0.22	2.98	0.06	4.86	-	8.13	
808+09	809+73	15.30	15.34	Federal Waters	N/A	SE Quad	Class 1	OLB	Jet/CC-Mats	164.0	C	F	0.11	1.51	0.03	2.45	-	4.10	
809+73	809+73	15.34	15.34	Federal Waters	N/A	SE Quad	Class 1	OLB	Cable Crossing	0.0	B	F	-	-	-	-	-	-	
809+73	811+37	15.34	15.37	Federal Waters	N/A	SE Quad	Class 1	OLB	Jet/CC-Mats	164.0	C	F	0.11	1.51	0.03	2.45	-	4.10	
811+37	812+49	15.37	15.39	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow/Jet	112.0	C	F	0.08	1.03	0.02	1.68	-	2.80	
812+49	812+98	15.39	15.40	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow/Jet	49.2	C	F	0.03	0.45	0.01	0.74	-	1.23	
812+98	814+62	15.40	15.43	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow/Jet	163.8	C	F	0.11	1.50	0.03	2.45	-	4.10	
814+62	818+55	15.43	15.50	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	392.4	A	F	0.18	0.50	0.06	3.70	-	4.43	
818+55	819+06	15.50	15.51	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	50.8	A	F	0.02	0.06	0.01	0.48	-	0.57	
819+06	838+36	15.51	15.88	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	1,930.7	A	F	0.89	2.44	0.29	18.19	-	21.81	
838+36	838+83	15.88	15.89	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	47.0	A	F	0.02	0.06	0.01	0.44	-	0.53	
838+83	841+80	15.89	15.94	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	297.2	A	F	0.14	0.38	0.05	2.80	-	3.36	
841+80	841+92	15.94	15.95	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	11.7	A	F	0.01	0.01	0.00	0.11	-	0.13	
841+92	842+45	15.95	15.96	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow/Jet	52.5	C	F	0.04	0.48	0.01	0.79	-	1.31	
842+45	845+17	15.96	16.01	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow/Jet	272.5	C	F	0.19	2.50	0.05	4.08	-	6.81	
845+17	846+81	16.01	16.04	Federal Waters	N/A	SE Quad	Class 1	OLB	Jetting	163.8	C	F	0.11	1.50	0.03	2.45	-	4.10	
846+81	847+81	16.04	16.06	Federal Waters	N/A	SE Quad	Class 1	Side Tap A/B	Jetting	100.0	D	F	0.07	0.92	0.01	1.00	-	2.00	41670.0
									Northeast Gateway Lateral Totals	84,781	-	-	39.56	133.21	12.97	814.10	0.07	999.91	
													4%	13%	1%	81%	0%		

Flowline A

Northeast Gateway Pipeline Lateral Comprehensive
Construction Method, Sediment Type and Impacts Table 2.3-1

Station		Milepost									Construction	Soil	Impact Areas (acres)					
															Anchoring			
From	To	From	To	Municipality	Ocean Sanctuary	EFH	Bottom Type	Pipe Lay Method	Trenching Method	Length	Sequence	Identifier	Trench	Side Cast	Anchors	Cable Sweep	Armoring	TOTAL
0+00	1+65	0.00	0.03	Federal Waters	N/A	SE Quad	Class 1	PLEM A	Jetting	165.0	D	F	0.11	1.52	0.02	1.65	-	3.29
1+65	4+90	0.03	0.09	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow/Jet	325.0	C	F	0.22	2.98	0.06	4.86	-	8.13
4+90	15+83	0.09	0.30	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	1,093.1	A	F	0.50	1.38	0.17	10.30	-	12.35
15+83	16+53	0.30	0.31	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	70.3	A	F	0.03	0.09	0.01	0.66	-	0.79
16+53	18+20	0.31	0.34	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	166.6	A	F	0.08	0.21	0.03	1.57	-	1.88
18+20	19+50	0.34	0.37	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	129.5	A	F	0.06	0.16	0.02	1.22	-	1.46
19+50	28+08	0.37	0.53	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	858.5	A	F	0.39	1.08	0.13	8.09	-	9.70
28+08	29+03	0.53	0.55	Federal Waters	N/A	SE Quad	Class 5	OLB	Plow	94.8	A	F	0.04	0.12	0.01	0.89	-	1.07
29+03	32+12	0.55	0.61	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	309.2	A	F	0.14	0.39	0.05	2.91	-	3.49
32+12	35+37	0.61	0.67	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow/Jet	325.0	C	F	0.22	2.98	0.06	4.86	-	8.13
35+37	37+02	0.67	0.70	Federal Waters	N/A	SE Quad	Class 1	Side Tap A	Jetting	165.0	D	F	0.11	1.52	0.02	1.65	-	3.29
									Flowline A Totals	3,702	-	-	1.92	12.44	0.57	36.66	-	53.59
													4%	23%	1%	72%	0%	
Flowline B																		
0+00	1+65	0.00	0.03	Federal Waters	N/A	SE Quad	Class 1	PLEM B	Jetting	165.0	D	F	0.11	1.52	0.02	1.65	-	3.29
1+65	4+90	0.03	0.09	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow/Jet	325.0	C	F	0.22	2.98	0.06	4.86	-	8.13
4+90	22+01	0.09	0.42	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow	1,711.2	A	F	0.79	2.16	0.26	16.12	-	19.33
22+01	25+26	0.42	0.48	Federal Waters	N/A	SE Quad	Class 1	OLB	Plow/Jet	325.0	C	F	0.22	2.98	0.06	4.86	-	8.13
25+26	26+91	0.48	0.51	Federal Waters	N/A	SE Quad	Class 1	Side Tap B	Jetting	165.0	D	F	0.11	1.52	0.02	1.65	-	3.29
									Flowline B Totals	2,691	-	-	1.46	11.16	0.41	29.14	-	42.17
													3%	26%	1%	69%	0%	

Bottom Type

Class 1 Sediments with a dominant size ranging from clay to medium sand; may include fractions of coarser sediments and isolated boulders.
Class 2 Sediments with a dominant size ranging from medium sand to gravel; may include fractions of finer and coarser sediments as well as individual boulders.
Class 3 Sediments with a dominant size ranging from gravel to boulders; may include fractions of finer sediments with bedrock in the shallow subsurface.
Class 4 Bedrock outcrops on the seafloor; rock surface may contain depressions filled with fine, medium and/or coarse sediments.
Class 5 Combination of Classes 1, 2, 3 sediments with unknown non-native material; these areas may be associated with activities at the Massachusetts Bay Disposal Sites
Class 1-HC Class 1 with a High Concentration of Boulders

Pipe Lay Method

HTap Hot Tap (Performed by DSV)
OLB Offshore Lay Barge

Consturction Methods

A Lay, Plow, Backfill Plow
B Surface Lay and Armoring
C Transitions - Jetting with Backfill)
D Jetting without Backfill (Tie-ins)

Tranching Methods		Total Length	Percentage	Flowline A		Flowline B	
CC-Mats	Surface Lay with Concrete Mat Cover	300	0.4%	0	0.0%	0	0.0%
Jetting	Mechanical Jetting	1,074	1.3%	330	6.9%	330	12.3%
Plow	Plow	61,129	95.7%	2,722	73.5%	1,711	63.6%
Plow/Jet	Transistion Areas - Plow then Mechanical Jetting	1,950	2.3%	650	17.6%	650	24.2%
Jet/CC-Mats	Mechanical Jetting with Concrete Mat Cover	328	0.4%	0	0.0%	0	0.0%
		84,761	100.0%	3,702	100.0%	2,691	100.0%

NOTES:

1 Construction includes employing Mid-line buoys on all anchor cables.
2 The width of the construction anchor corridor is 6,000 feet along the entire pipeline route.

Northeast Gateway Pipeline Lateral Comprehensive Construction Method, Sediment Type and Impacts Table 2.3-1

Station		Milepost		Pipe Lay	Trenching	
From	To	From	To	Method	Method	Length
0+00	1+00	0.0	0.0	HTap	Jetting	100
1+00	2+64	0.0	0.1	OLB	Jetting	164
2+64	5+89	0.1	0.1	OLB	Plow/Jet	325
5+89	293+00	0.1	5.5	OLB	Plow	28,711
293+00	296+25	5.5	5.6	OLB	Plow/Jet	325
296+25	298+84	5.6	5.7	OLB	Jetting	259
298+84	300+34	5.7	5.7	OLB	CC-Mats	150
300+34	300+34	5.7	5.7	OLB	Hibernia Cable	0
300+34	301+84	5.7	5.7	OLB	CC-Mats	150
301+84	304+71	5.7	5.8	OLB	Jetting	287
304+71	307+96	5.8	5.8	OLB	Plow/Jet	325
307+96	804+84	5.8	15.2	OLB	Plow	49,688
804+84	808+09	15.2	15.3	OLB	Plow/Jet	325
808+09	809+73	15.3	15.3	OLB	Jet/CC-Mats	164
809+73	809+73	15.3	15.3	OLB	Cable Anomaly	0
809+73	811+37	15.3	15.4	OLB	Jet/CC-Mats	164
811+37	814+62	15.4	15.4	OLB	Plow/Jet	325
814+62	841+80	15.4	15.9	OLB	Plow	2,718
841+80	845+17	15.9	16.0	OLB	Plow/Jet	337
845+17	846+81	16.0	16.0	OLB	Jetting	164
846+81	847+81	16.0	16.1	OLB	Side Tap A/B	100
					Northeast Gateway Lateral Totals	84,781

Flowline A

0+00	1+65	0.00	0.03	PLEM A	Jetting	165.0
1+65	4+90	0.03	0.09	OLB	Plow/Jet	325.0
4+90	32+12	0.09	0.61	OLB	Plow	2,722.0
32+12	35+37	0.61	0.67	OLB	Plow/Jet	325.0
35+37	37+02	0.67	0.70	Side Tap A	Jetting	165.0
					Flowline A Totals	3,702

Flowline B

0+00	1+65	0.00	0.03	PLEM B	Jetting	165.0
1+65	4+90	0.03	0.09	OLB	Plow/Jet	325.0
4+90	22+01	0.09	0.42	OLB	Plow	1,711.2
22+01	25+26	0.42	0.48	OLB	Plow/Jet	325.0
25+26	26+91	0.48	0.51	Side Tap B	Jetting	165.0
					Flowline B Totals	2,691

Pipe Lay Method

HTap Hot Tap (Perfromed by DSV)
PLEM Pipeline End Manifold (Performed by DSV)
OLB Offshore Lay Barge

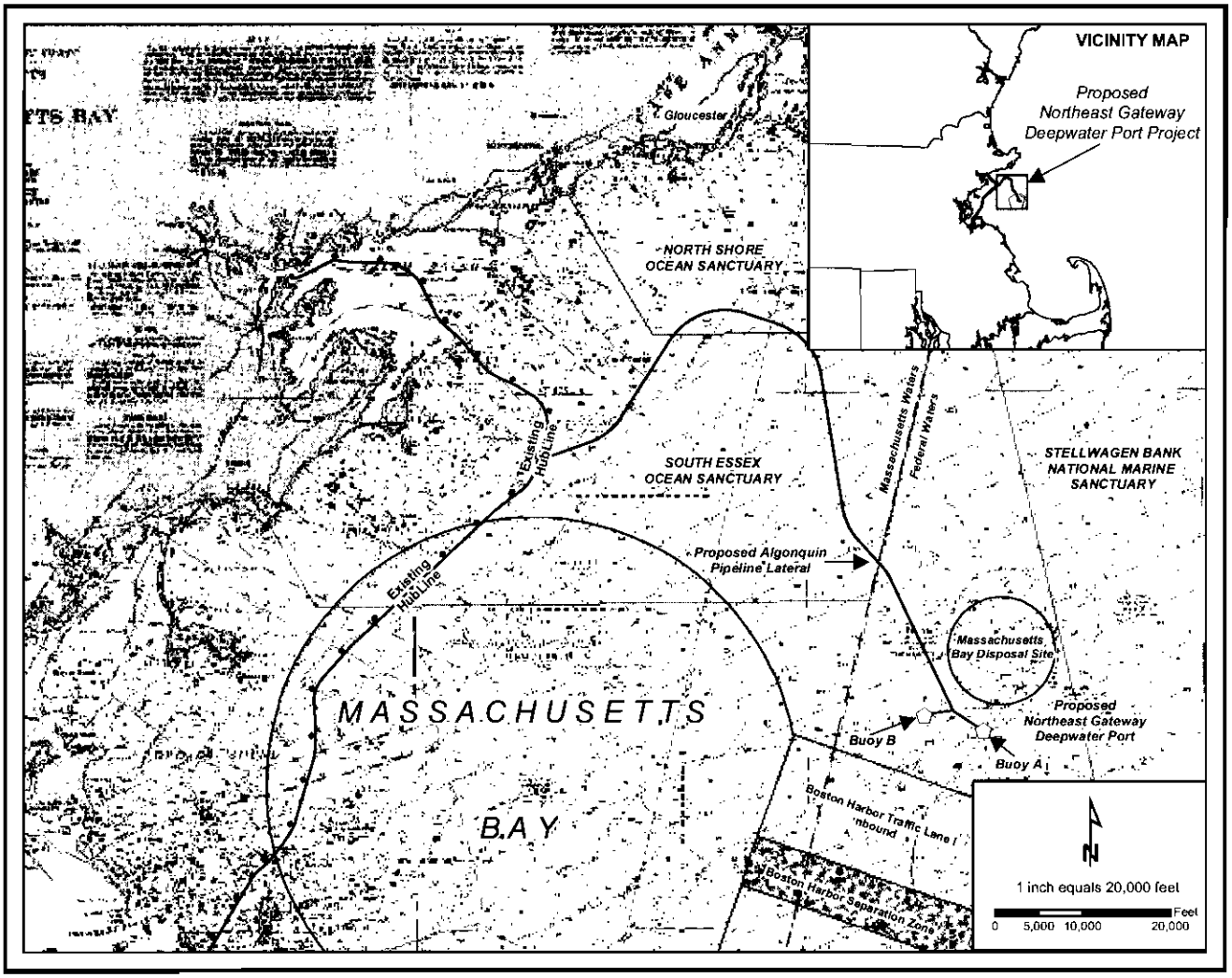
Trenching Methods

CC-Mats	Surface Lay with Concrete Mat Cover
Jetting	Mechanical Jetting
Plow	Plow
Plow/Jet	Transition Areas - Plow then Mechanical Jetting
Jet/CC-Mats	Mechanical Jetting with Concrete Mat Cover

NOTES:

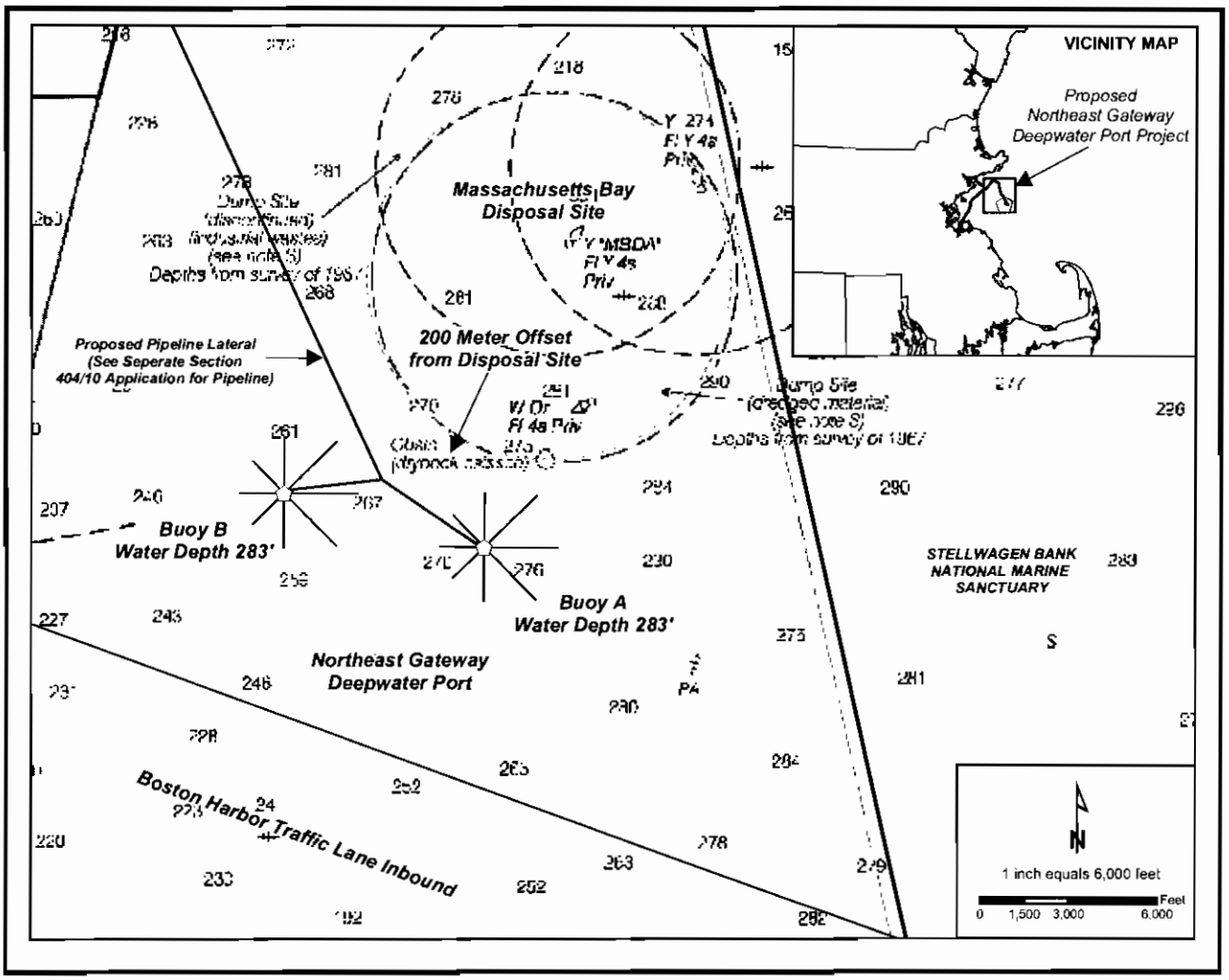
1 Construction includes employing Mid-line buoys on all anchor cables.
2 The width of the construction anchor corridor is 6,000 feet along the entire pipeline route.

Trenching Method Summary						
Type	**Lateral**	**%**	**Flowline A**	**%**	**Flowline B**	**%**
CC-Mats	300	0.4%	0	0%	0	0%
Jetting	1,074	1.3%	330	9%	330	12%
Plow	81,129	95.7%	2,722	74%	1,711	64%
Plow/Jet	1,950	2.3%	650	18%	650	24%
Jet/CC-Ma	328	0.4%	0	0%	0	0%
	84,781	**100%**	**3,702**	**100%**	**2,691**	**100%**



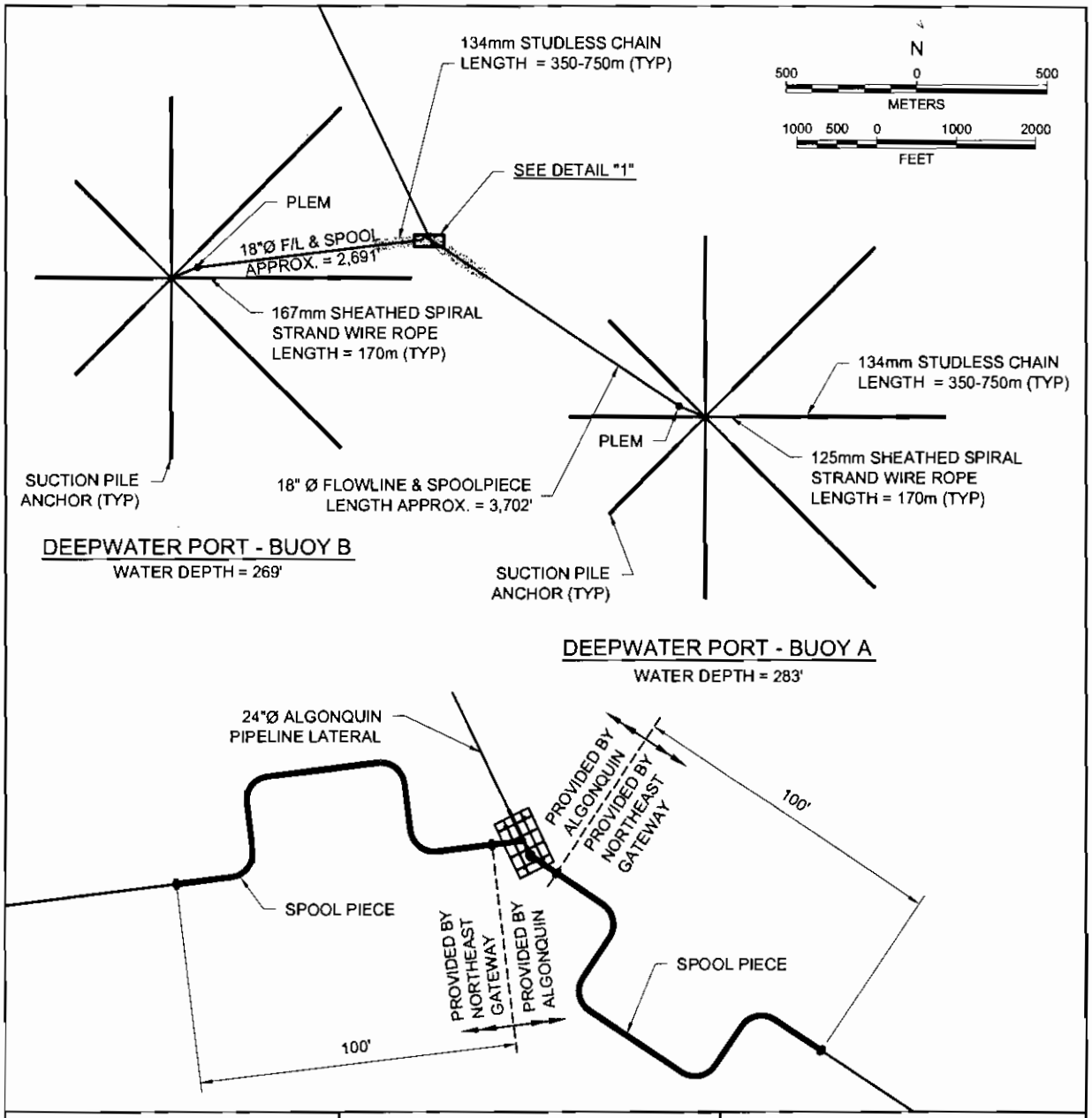
Gloucester is located approximately 13 miles north of the proposed port.

Purpose: Install Deepwater Port Coordinates: Buoy A: 42° 23' 38.46" N, 70° 35' 31.02" W Buoy B: 42° 23' 56.40" N, 70° 37' 0.36" W Tetra Tech EC, Inc 133 Federal Street Boston, MA 02110	**VICINITY MAP** APPLICATION BY: Northeast Gateway Energy Bridge LLC 1330 Lake Robbins Drive The Woodlands, TX 77380	Proposed - Northeast Port: STL Buoys, Anchor Chains, PLEMs and Flowlines In: Massachusetts Bay approximately 13 miles southeast of Gloucester Date: DEC 2005 SHEET 1 of 8



Federal Channel is 7600' (1.4 miles) southwest of Buoy A and 7000' (1.3 miles) southwest of Buoy B.

Purpose: Install Deepwater Port Coordinates: Buoy A: 42° 23' 38.46" N, 70° 35' 31.02" W Buoy B: 42° 23' 56.40" N, 70° 37' 0.36" W Tetra Tech EC, Inc 133 Federal Street Boston, MA 02110	**PLAN VIEW** APPLICATION BY: Northeast Gateway Energy Bridge LLC 1330 Lake Robbins Drive The Woodlands, TX 77380	Proposed - Northeast Port: STL Buoys, Anchor Chains, PLEMSs and Flowlines In: Massachusetts Bay approximately 13 miles southeast of Gloucester Date: DEC 2005 SHEET 2 of 8



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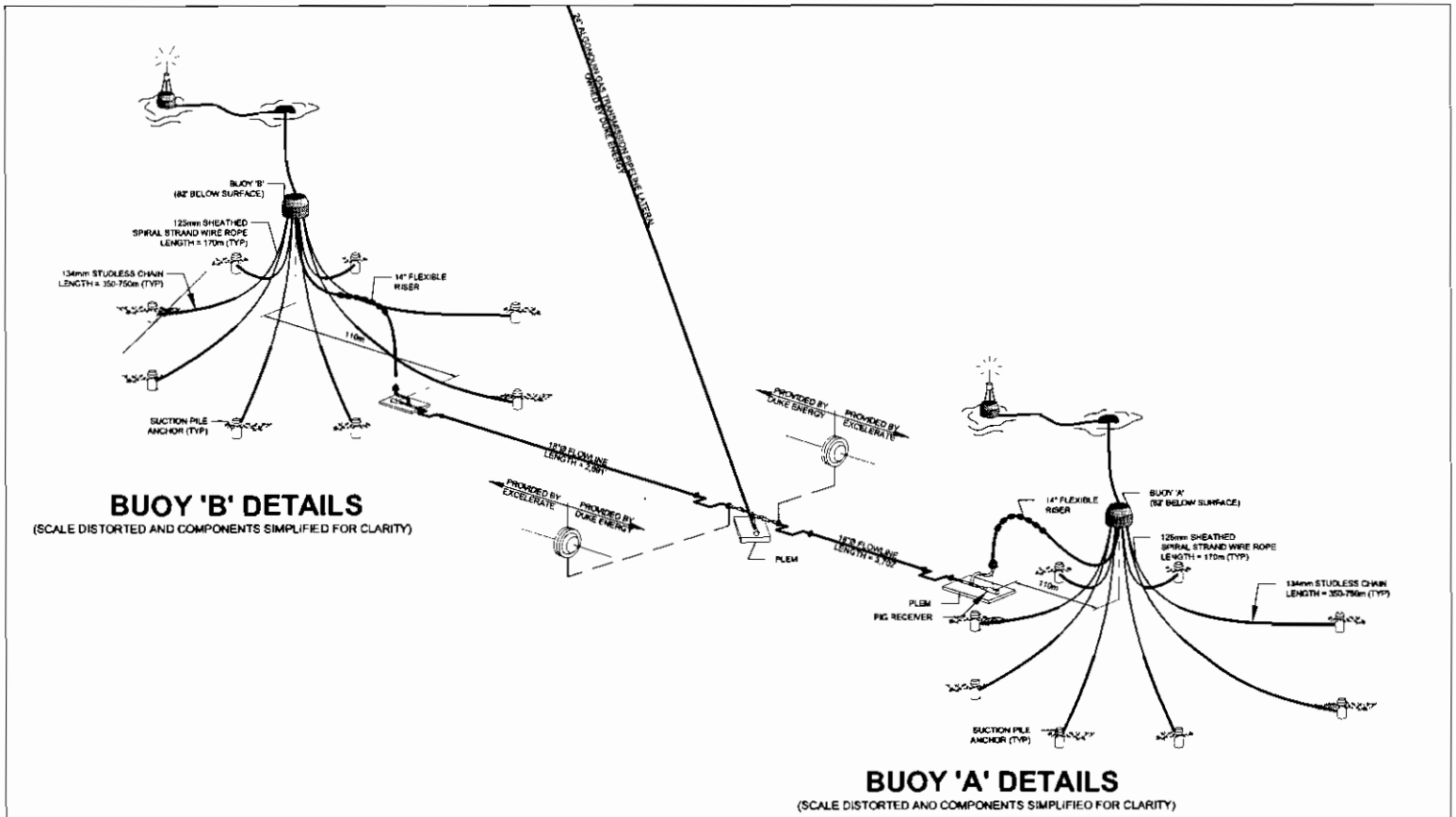


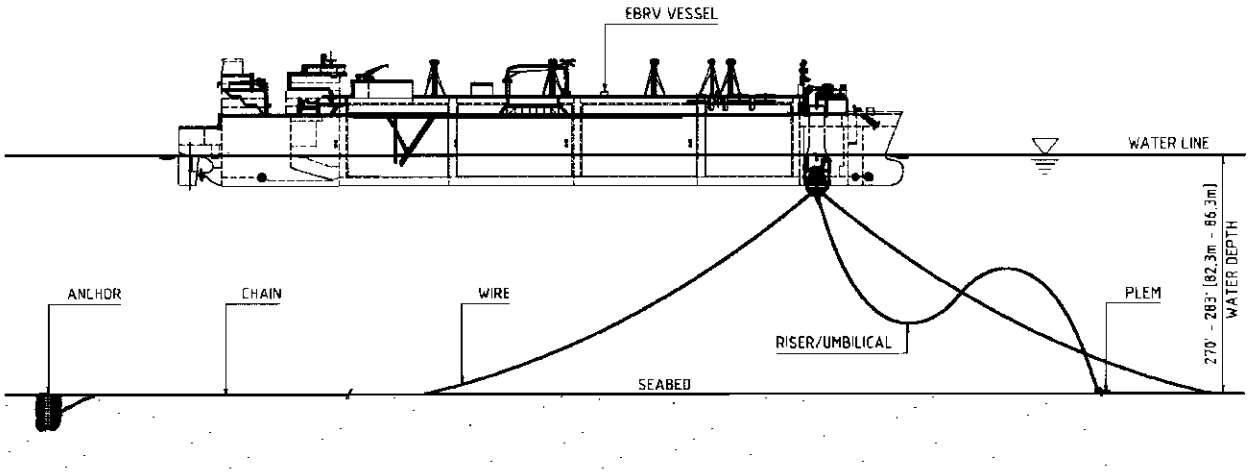
BUOY 'B' DETAILS

(SCALE DISTORTED AND COMPONENTS SIMPLIFIED FOR CLARITY)

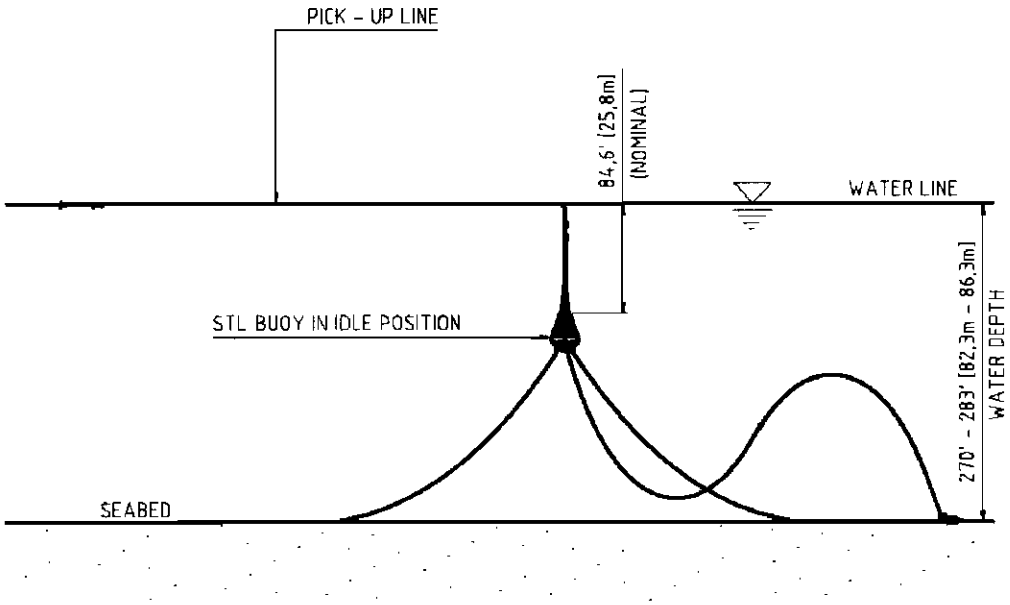
BUOY 'A' DETAILS

(SCALE DISTORTED AND COMPONENTS SIMPLIFIED FOR CLARITY)

Purpose: Install Deepwater Port Coordinates: Buoy A: 42° 23' 38.46" N, 70° 35' 31.02" W Buoy B: 42° 23' 56.40" N, 70° 37' 0.36" W Tetra Tech EC, Inc. 133 Federal Street Boston, MA 02110	**ISOMETRICS - STL BUOYS, ANCHORS, CHAINS, FLEXIBLE RISERS, PLEMS AND FLOWLINES** APPLICATION BY: Northeast Gateway Energy Bridge LLC 1330 Lake Robbins Drive The Woodlands, TX 77380	Proposed - Northeast Port: STL Buoys, Anchor Chains, PLEMSs and Flowlines In: Massachusetts Bay approximately 13 miles southeast of Gloucester Date: May 2006 SHEET 4 of 8

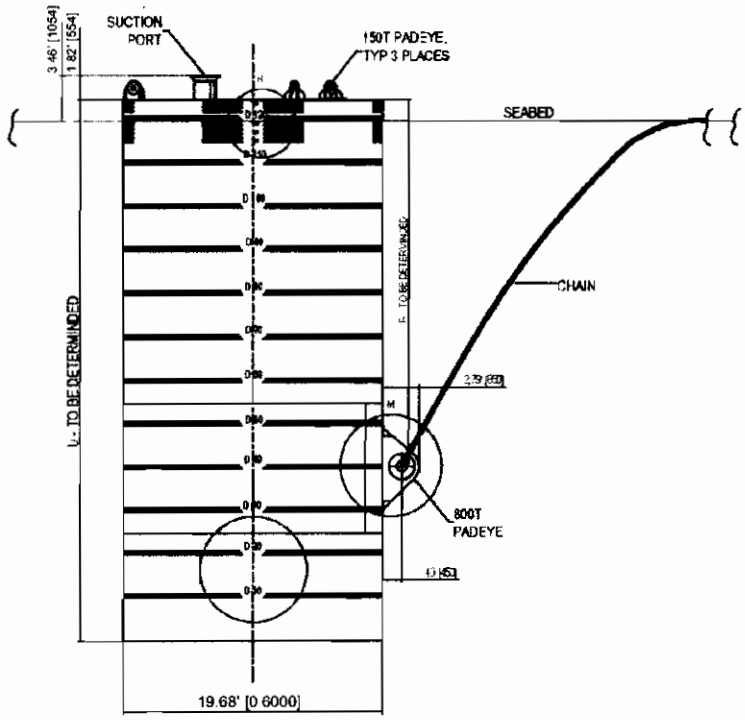


BUOY CONNECTED

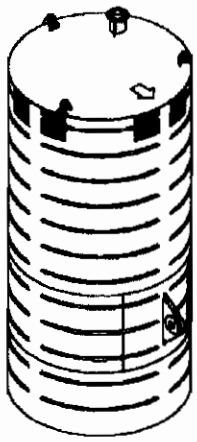


BUOY DISCONNECTED

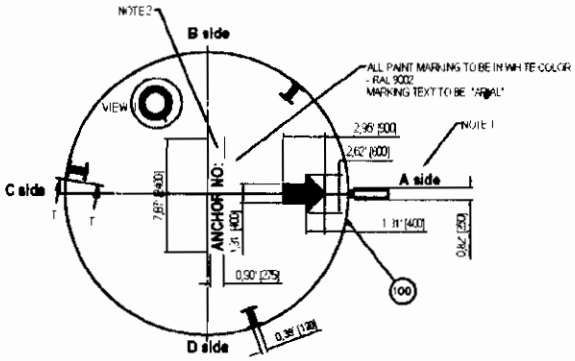
Purpose: Install Deepwater Port Coordinates: Buoy A: 42° 23' 38.46" N, 70° 35' 31.02" W Buoy B: 42° 23' 56.40" N, 70° 37' 0.36" W Tetra Tech EC, Inc 133 Federal Street Boston, MA 02110	**CROSS SECTIONS** **STL BUOY AND ANCHOR CHAINS** APPLICATION BY: Northeast Gateway Energy Bridge LLC 1330 Lake Robbins Drive The Woodlands, TX 77380	Proposed - Northeast Port: STL Buoys, Anchor Chains, PLEMSs and Flowlines In: Massachusetts Bay approximately 13 miles southeast of Gloucester Date: DEC 2005 SHEET 5 of 8



SIDE VIEW

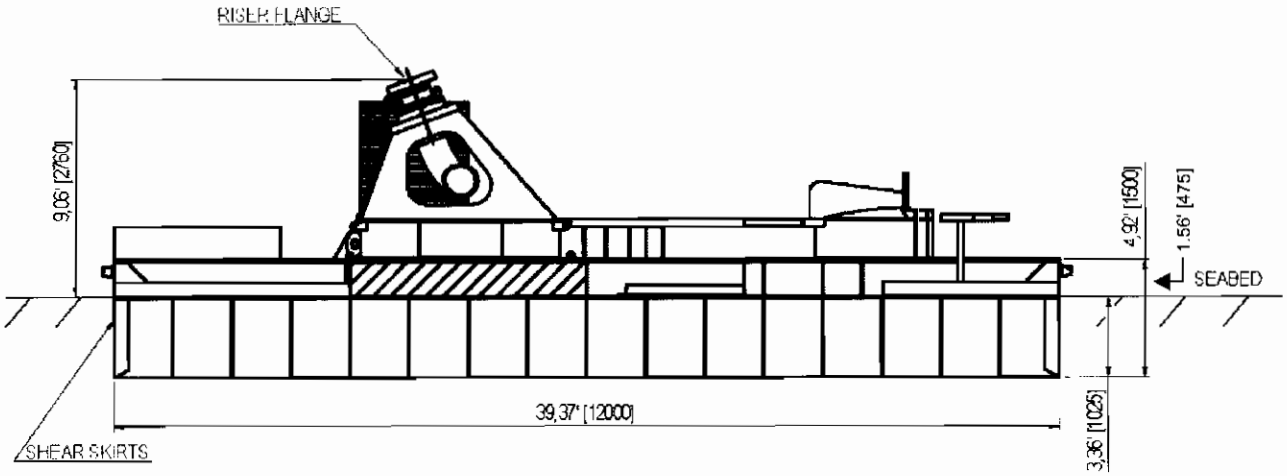


ISOMETRIC VIEW



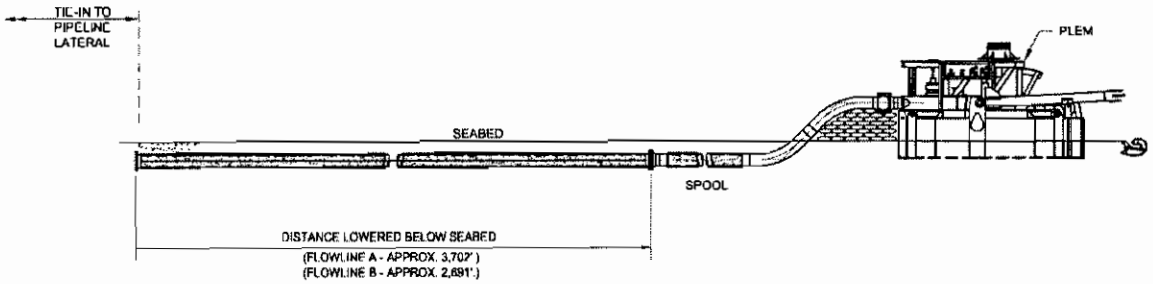
TOP VIEW

Purpose: Install Deepwater Port Coordinates: Buoy A: 42° 23' 38.46" N, 70° 35' 31.02" W Buoy B: 42° 23' 56.40" N, 70° 37' 0.36" W Tetra Tech EC, Inc 133 Federal Street Boston, MA 02110	**SUCTION ANCHOR** APPLICATION BY: Northeast Gateway Energy Bridge LLC 1330 Lake Robbins Drive The Woodlands, TX 77380	Proposed - Northeast Port: STL Buoys, Anchor Chains, PLEMSs and Flowlines In: Massachusetts Bay approximately 13 miles southeast of Gloucester Date: DEC 2005 SHEET 6 of 8

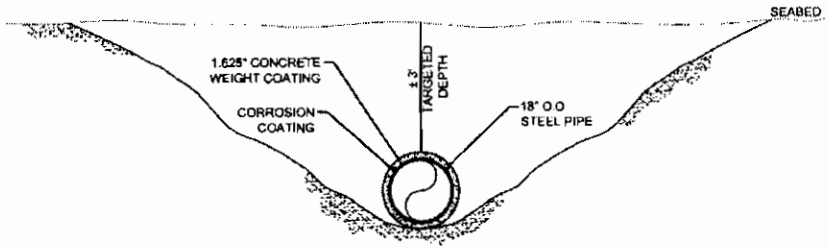


CROSS SECTION
PLEM

Purpose: Install Deepwater Port Coordinates: Buoy A: 42° 23' 38.46" N, 70° 35' 31.02" W Buoy B: 42° 23' 56.40" N, 70° 37' 0.36" W Tetra Tech EC, Inc 133 Federal Street Boston, MA 02110	**CROSS SECTION** **PLEM** APPLICATION BY: Northeast Gateway Energy Bridge LLC 1330 Lake Robbins Drive The Woodlands, TX 77380	Proposed - Northeast Port: STL Buoys, Anchor Chains, PLEMSs and Flowlines In: Massachusetts Bay approximately 13 miles southeast of Gloucester Date: DEC 2005 SHEET 7 of 8



SIDE ELEVATION



TYPICAL FLOWLINE CROSS SECTION
BELOW SEABED

Purpose: Install Deepwater Port Coordinates: Buoy A: 42° 23' 38.46" N, 70° 35' 31.02" W Buoy B: 42° 23' 56.40" N, 70° 37' 0.36" W Tetra Tech EC, Inc. 133 Federal Street Boston, MA 02110	**FLOWLINE** APPLICATION BY: Northeast Gateway Energy Bridge LLC 1330 Lake Robbins Drive The Woodlands, TX 77380	Proposed - Northeast Port: STL Buoys, Anchor Chains, PLEMSs and Flowlines In: Massachusetts Bay approximately 13 miles southeast of Gloucester Date: May 2006 SHEET 8 of 8

Salem
STATE COLLEGE

Driving Directions

From The North

From Maine, New Hampshire, and other points North, take 1-93 South or I-95 South to Route 128 North. Proceed on Route 128 North, keeping to the LEFT when you see signs indicating I-95 and Rte 128 will be splitting. Take Exit 25A (Salem / Marblehead exit) and head eastbound on Rte 114. Please note that Rte 114 exit is 3 exits after the 128/I-95 split. Proceed on Route 114 East for 3.9 miles to the College.

Note: When you exit off Route 128, take a left at 3rd traffic light and continue on Route 114 East to the College. Rtes 114 and 1A will run concurrently through Salem. You will come to a fork in the road where 114 will continue straight toward Marblehead and 1A heads southward to Boston. The Main Campus of the College is in this fork.

To Library - Charlotte Forten Hall - 360 Lafayette Street

Keep on Lafayette Street, straight through set of lights towards Marblehead. Go pass Main Auditorium and Meier Hall on right hand side. Next building is the Library (4 story yellow brick). Take a quick right after library on to College Drive. There will be Parking in Lot A (on left hand side) and also Parking in Lot C which is at the end of the driveway and take left at Peabody Hall (student's residence).
Forten Hall is on the 4th floor of the Library.

Salem
STATE COLLEGE

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Forten Hall is on the 4th floor of the Library.